

The **thesistu** class*

Maximilian Hoheiser
`maximilian.hoheiser@student.tuwien.ac.at`

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Abstract

This class provides a $\text{\LaTeX} 2_{\varepsilon}$ template for theses at any Faculty at any University given by the author, only a Logo of the Faculty and University is needed. With a little effort it can be adapted to fit any Faculty at any University. In the current version, bachelor and master theses as well as dissertations are supported in both English and German.

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1 Introduction

This class provides a L^AT_EX 2_ε 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://madmaxt800.github.io/thesistu/>. 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
\setlecture
```

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^P</code>	Title of the thesis	All	No
<code>\setsubtitle^P</code>	Subtitle of the thesis	All	Yes
<code>\setcurriculum^P</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
<code>\setlecture</code>	Name of the lecture	All	Yes
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
\setdate	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
\command{<.>}{<.>}{<.>}{<list>}	male	Specifies a male person.
	female	Specifies a female person.

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

Command	Options	Description
\setthesis{<list>}	bachelor	Specifies a bachelor's thesis.
	master	Specifies a master's thesis.
	doctor	Specifies a dissertation.
	phd-school	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 enrolled 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 enrolled 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>\setuniversity</code>	Use as <code>\setuniversity{<i>english</i>}{<i>german</i>}</code> , it sets the university name both

in english and in german, if both the english and the german titlepage are used, both names must be supplied.

- \setfaculty** Use as `\setfaculty{<english>}{<german>}`, it sets the faculty name both in english and in german, if both the english and the german titlepage are used, both names must be supplied.
- \setinstitut** Use as `\setinstitut{<english>}{<german>}`, it specifies a name for your institut, like the `\setinstitut` macro depending on which titlepage is used, the german and, or the english name must be supplied.
- \setlecture** Use as `\setlecture{<english>}{<german>}`, it specifies a name for the lecture under which the thesis is written, like the `\setlecture` macro depending on which titlepage 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{<list>}</code>	english	Generates an English title page.
	naustrian	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 and also an introduction. In the remainder of this section, the available items of the front matter are given.

- \setlogo** Used as `\setlogo{<UNins>}`, where `<UN>` are the first two letters of your university and `<ins>` are the first three letters of your institut. The Logo-File must be a vector graphic with the `.eps` format. The file must be placed in the main graphics folder and must have the name: `UNins_logo.eps`. To create your own, use the given ones as reference. And make sure, that you submit your new ones to GitHub.
- \setheader** Used as `\setheader{<UNins>}`, where `<UN>` are the first two letters of your university and `<ins>` are the first three letters of your institut. The Logo-File must be a vector graphic with the `.eps` format. The file must be placed in the main graphics folder and must have the name: `UNins_header.eps`. To create your own, use the given ones as reference. And make sure, that you submit your new ones to GitHub.

The goal is to have as many logos and headers as possible, so that the author only has to specify one and not create his/her own. A list is given and regularly updated which lists the available ones:

Name	University	Institut
TUinf	TU Wien	Informatik
TUifp	TU Wien	Institut für Festkörperphysik

The following section describes the information that is needed for the footnote on the titlepage, besides the university name.

<code>\setunizipcode</code>	Used as <code>\setunizipcode{⟨ZipCode⟩}</code> , where <code>⟨ZipCode⟩</code> is the ZipCode of the University in the form of eg: <code>{⟨A-1040⟩}</code> , where <code>⟨A⟩</code> is the first letter of the country, and <code>⟨1040⟩</code> is the actual zipcode.
<code>\setunistreet</code>	Used as <code>\setunistreet{⟨Steetname Steetnumber⟩}</code> , where <code>⟨Steetname⟩</code> is the name of the street, and <code>⟨Steetnumber⟩</code> is the Steetnumber of the university.
<code>\unicity</code>	Used as <code>\setunicity{⟨City⟩}</code> , where <code>⟨City⟩</code> is the City of your universities address.
<code>\setunitelnr</code>	Used as <code>\setunitelnrTelephone Number</code> , where <code>⟨Telephone Number⟩</code> is the main telephone number of your university, this is not necessary but the layout will look better with the telephone number given.
<code>\setuniwebsite</code>	Used as <code>\setuniwebsite{⟨URL⟩}</code> , where <code>⟨URL⟩</code> is the website of your university (without <code>http://</code>).
<code>\addtitlepage</code>	Used as <code>\addtitlepage{⟨lang⟩}</code> , where <code>⟨lang⟩</code> is the name of a language as given in the <code>babel</code> 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 <code>\begin{document}\frontmatter</code> .
<code>\addstatementpage</code>	Used as <code>\addstatementpage</code> , it generates a page with the statement of originality.
<code>acknowledgements</code> <code>acknowledgements*</code>	Used as <code>\begin{acknowledgements}⟨text⟩\end{acknowledgements}</code> , this environment generates a chapter with the English acknowledgements. Use the starred version, i.e., <code>acknowledgements*</code> , to remove the table of content entry of this environment.
<code>danksagung</code> <code>danksagung*</code>	Used as <code>\begin{danksagung}⟨text⟩\end{danksagung}</code> , this environment generates a chapter with the German acknowledgements. Use the starred version, i.e., <code>danksagung*</code> , to remove the table of content entry of this environment.
<code>abstract</code> <code>abstract*</code>	Used as <code>\begin{abstract}⟨text⟩\end{abstract}</code> , this environment generates a chapter with the English abstract. Use the starred version, i.e., <code>abstract*</code> , to remove the table of content entry of this environment.
<code>kurzfassung</code> <code>kurzfassung*</code>	Used as <code>\begin{kurzfassung}⟨text⟩\end{kurzfassung}</code> , this environment generates a chapter with the German abstract. Use the starred version, i.e., <code>kurzfassung*</code> , to remove the table of content entry of this environment.
<code>introduction</code> <code>introduction*</code>	Used as <code>\begin{introduction}⟨text⟩\end{introduction}</code> , this environment generates a chapter with the English introduction. Use the starred version, i.e., <code>introduction*</code> , to remove the table of content entry of this environment.

`einleitung` Used as `\begin{einleitung}\end{einleitung}`, this environment generates a chapter with the German introduction. Use the starred version, i.e., `einleitung*`, 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 `thesistu` 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 `\thesistu@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 `\thesistu@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>}{<prettitle>}{<personname>}{<posttitle>}{<gender>}`, the newly created command assigns the supplied values to the corresponding internal variables `\thesistu@person@<name>@...` as given in the table below.

Argument	Internal Variable
	<code>\thesistu@person@<name>@def</code>
<code><prettitle></code>	<code>\thesistu@person@<name>@prettitle</code>
<code><personname></code>	<code>\thesistu@person@<name>@name</code>
<code><posttitle></code>	<code>\thesistu@person@<name>@posttitle</code>
<code><gender></code>	<code>\thesistu@person@<name>@gender</code>

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

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

`\AddLanguage` Used as `\AddLanguage{<lang>}`, it enables the language `<lang>` to be used by polylingual expressions. `<lang>` has to be chosen from the languages of the `babel` package that is used by this class. Currently, `thesistu` uses two languages, i.e., `english` for English expressions and `naustrian` for German expressions.

`\CreatePolylingual` Used as `\CreatePolylingual[<expressions>]{<name>}`, it generates a command `\thesistu@polylingual@<name>` that selects the appropriate expression based on the current language at the time of use. The argument `<expressions>` is a list of elements of the form `<expri>`, where each element defines the expression for a valid language, e.g., `<langi>=<texti>`. `<langi>` has to be chosen from the languages that were defined via `\AddLanguage`. 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.,
`\CreatePolylingual[english=advisor,naustrian=Betreuer]{advisor}`
`\CreatePolylingual[english=Advisor,naustrian=Betreuer]{Advisor}`
`\CreatePolylingual[english=ADVISOR,naustrian=BETREUER]{ADVISOR}`.
 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.

`\SignatureFields` Used as `\SignatureFields[<mode>]{<center>}{<right>}`, it creates a place and date description and/or one or two signature fields. `<mode>` can be set to `y`, which adds an entry with date and place to the left, to `h`, which adds the corresponding whitespace, or to `n`, which adds nothing. If text is supplied to `<center>`, it is added below a rule, right to the possible date and place entry. If text is supplied to `<right>`, it is added below a rule, right to the possible signature field created by `<center>`. This command ensures a uniform width and positioning of the signature fields on both the title pages and the statement of originality.

`\SignatureBlock` Used as `\SignatureBlock`, it generates the signature fields for both author and advisor.

`\ReviewerBlock` Used as `\ReviewerBlock`, it generates the signature fields for both reviewers.

`\AdvisorBlock` Used as `\AdvisorBlock`, it generates the name fields for both the advisor and the potential assistants.

`\AddTitlePage` Used as `\AddTitlePage`, 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
17 \RequirePackage{graphicx}%
18 \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.

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

`\todo` Comment for the final version, to raise errors.

```
20 \newcommand{\todo}[1]{\color{red}\textbf{TODO: {#1}}}%
21 % \end{macrocode}
22 %\end{macro}
23 %
24 % \begin{macro}{\ifstrequal}
25 % A variant of |\ifstrequal| that fully expands the first two arguments.
26 % \begin{macrocode}
27 \newcommand{\ifstrequal}[4]{%
28 \begingroup
29 \edef\thesistu@tempa{{#1}}%
30 \edef\thesistu@tempb{{#2}}%
31 \expandafter\expandafter\expandafter\ifstrequal
32 \expandafter\thesistu@tempa\thesistu@tempb{#3}{#4}%
33 \endgroup
34 }%
```

5.1.4 Fonts

`\thesistu@HUGE` Initializes the font sizes.

```
\thesistu@huge
\thesistu@LARGE
\thesistu@Large
\thesistu@large
\thesistu@normalsize
35 \newcommand{\thesistu@HUGE}{\fontsize{30}{34}\selectfont}%
36 \newcommand{\thesistu@huge}{\fontsize{20}{23}\selectfont}%
37 \newcommand{\thesistu@LARGE}{\fontsize{17}{22}\selectfont}%
38 \newcommand{\thesistu@Large}{\fontsize{14}{18}\selectfont}%
39 \newcommand{\thesistu@large}{\fontsize{12}{14.5}\selectfont}%
40 \newcommand{\thesistu@normalsize}{\fontsize{11}{13.6}\selectfont}%
```

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

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

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

```

42 \begingroup
43   \sffamily
44   \global\let\thesistu@f@family@tmp=\f@family
45 \endgroup
46 \renewcommand{\sfdefault}{#1}%

```

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

```

47 \ifdefstrequal{\f@family}{\thesistu@f@family@tmp}{\sffamily}{}%
48 }{%

```

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.

```

49 \renewcommand{\sfdefault}{\thesistu@f@family@tmp}%
50 }%

```

5.2 Data

5.2.1 Dates

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

```

51 \newcommand{\setdate}[3]{%
52   \newdate{thesistu@date@signing}{#1}{#2}{#3}%
53 }%

```

5.2.2 Textual Data

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

```

54 \newcommand{\thesistu@def@data}[2]{%
55   \@namedef{thesistu@data@#1@def}{}%
56   \@namedef{thesistu@data@#1}{#2}%
57 }%

```

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

```

58 \newcommand{\thesistu@def@data@invalid}[2]{%
59   \@namedef{thesistu@data@#1@error}{%
60     \ClassError{thesistu}{No #2 issued}{Set #1 with #2.}%
61   }%
62   \@namedef{thesistu@data@#1}{\@nameuse{thesistu@data@#1@error}}%
63 }%

```

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

```

64 \newcommand{\CreateData}[1]{%
65   \@namedef{set#1}##1{%
66     \thesistu@def@data{#1}{##1}%
67   }%
68   \thesistu@def@data@invalid{#1}{\string\set#1}%
69 }%
```

5.2.3 Persons

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

```

70 \newcommand{\thesistu@person@male}{male}%
71 \newcommand{\thesistu@person@female}{female}%
```

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

```

72 \newcommand{\ifmale}[2]{%
73   \ifcsstring{thesistu@person@#1@gender}{\thesistu@person@male}{#2}{}%
74 }%
75 \newcommand{\iffemale}[2]{%
76   \ifcsstring{thesistu@person@#1@gender}{\thesistu@person@female}{#2}{}%
77 }%
```

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

```

78 \newcommand{\thesistu@def@person}[5]{%
79   \@namedef{thesistu@person@#1@def}{}%
80   \@namedef{thesistu@person@#1@prettitle}{#2}%
81   \@namedef{thesistu@person@#1@name}{#3}%
82   \@namedef{thesistu@person@#1@posttitle}{#4}%
83   \ifdefstring{\thesistu@person@male}{#5}{%
84     \@namedef{thesistu@person@#1@gender}{\thesistu@person@male}%
85   }{}%
86   \ifdefstring{\thesistu@person@female}{#5}{%
87     \@namedef{thesistu@person@#1@gender}{\thesistu@person@female}%
88   }{}%
```

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

```

89   \ifstrempy{#3}{%
90     \ifstrempy{#2}{%
91       \@namedef{thesistu@person@#1@fullname}{#4}%
92     }%
93     \ifstrempy{#4}{%
94       \@namedef{thesistu@person@#1@fullname}{#2}%
95     }%
```

```

96     \@namedef{thesistu@person@#1@fullname}{#2 #4}%
97   }%
98 }%
99 }{%
100   \ifstrempy{#2}{%
101     \ifstrempy{#4}{%
102       \@namedef{thesistu@person@#1@fullname}{#3}%
103     }{%
104       \@namedef{thesistu@person@#1@fullname}{#3, #4}%
105     }%
106   }{%
107     \ifstrempy{#4}{%
108       \@namedef{thesistu@person@#1@fullname}{#2 #3}%
109     }{%
110       \@namedef{thesistu@person@#1@fullname}{#2 #3, #4}%
111     }%
112   }%
113 }%
114 }%

```

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

```

115 \newcommand{\thesistu@def@person@invalid}[2]{%
116   \@namedef{thesistu@person@#1@error}{%
117     \ClassError{thesistu}{No #2 issued}{Set #1 with #2.}%
118   }%
119   \@namedef{thesistu@person@#1@name}{%
120     \@nameuse{thesistu@person@#1@error}}%
121   \@namedef{thesistu@person@#1@prettitle}{%
122     \@nameuse{thesistu@person@#1@error}}%
123   \@namedef{thesistu@person@#1@posttitle}{%
124     \@nameuse{thesistu@person@#1@error}}%
125   \@namedef{thesistu@person@#1@gender}{%
126     \@nameuse{thesistu@person@#1@error}}%
127   \@namedef{thesistu@person@#1@fullname}{%
128     \@nameuse{thesistu@person@#1@error}}%
129 }%

```

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

```

130 \newcommand{\CreatePerson}[1]{%
131   \@namedef{set#1}##1##2##3##4{%
132     \thesistu@def@person{#1}{##1}{##2}{##3}{##4}%
133   }%
134   \thesistu@def@person@invalid{#1}{\string\set#1}%
135 }%

```

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.

```
136 \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.

```
137   \@namedef{KV@thesistu@#1}##1{%
138     \@namedef{thesistu@current@#1}{##1}%
139   }%
```

The key value is initialized as empty.

```
140   \@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.

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

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

```
142     \newcommand{\thesistu@allocate@polylingual}[1]{\@empty}%
143   }{}%
```

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

```
144   \@namelet{thesistu@allocate@polylingual@#1}%
145     \thesistu@allocate@polylingual
```

Define the transfer function to permanent storage.

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

Call the transfer routine of the previously defined language.

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


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

```
148 \@@namexdef{thesistu@##1@#1}{%
149 \ifcsemtu{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.

```
150 \ifdraftdoc{%
151 [Draft: No '#1' text for polylingual '##1'.]%
152 }\else{%
153 \relax
154 }\fi
155 }{%
```

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

```
156 \@@nameuse{thesistu@current@#1}%
157 }%
158 }%
159 }%
```

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

```
160 \ifundef{\thesistu@selectlanguage@polylingual}{%
```

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

```
161 \newcommand{\thesistu@selectlanguage@polylingual}[1]{\@empty}%
162 }{}%
```

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

```
163 \@@namelet{thesistu@selectlanguage@polylingual@#1}%
164 \thesistu@selectlanguage@polylingual
```

Define the selection function.

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

Call the selection routine of the previously defined language.

```
166 \@@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.

```
167 \ifdefstring{\language}{#1}{\@@nameuse{thesistu@##1@#1}}{}%
```

```

168 }%
169 }%

```

`\CreatePolylingual` Creates the actual polylingual expressions.

```

170 \newcommand{\CreatePolylingual}[2][]{%
171   \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.

```

172   \setkeys{thesistu}{#1}%

```

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

```

173   \thesistu@allocate@polylingual{#2}%
174   \endgroup

```

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

```

175   \@namedef{thesistu@polylingual@#2}{%
176     \thesistu@selectlanguage@polylingual{#2}}%
177 }%

```

5.2.5 Thesis Types

`\thesistu@thesis@basetype@undergraduate` Two thesis categories are differentiated: `undergraduate` and `graduate`.
`\thesistu@thesis@basetype@graduate`

```

178 \newcommand{\thesistu@thesis@basetype@undergraduate}{%
179   thesistu@undergraduate}%
180 \newcommand{\thesistu@thesis@basetype@graduate}{%
181   thesistu@graduate}%

```

`\ifundergraduate` Convenience macros to determine the category of the selected thesis type.
`\ifgraduate`

```

182 \newcommand{\ifundergraduate}[1]{%
183   \ifstrequal{\thesistu@thesis@basetype}{%
184     \thesistu@thesis@basetype@undergraduate
185   }{#1}{}%
186 }%
187 \newcommand{\ifgraduate}[1]{%
188   \ifstrequal{\thesistu@thesis@basetype}{%
189     \thesistu@thesis@basetype@graduate
190   }{#1}{}%
191 }%

```

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

```
192 \newcommand{\thesistu@thesis@doctortype@doctor}{%
193   thesistu@doctor}%
194 \newcommand{\thesistu@thesis@doctortype@phd}{%
195   thesistu@phd}%
```

`\ifdoctor` Convenience macros to determine the category of the selected doctor thesis type.

`\ifphd` These need to be nested inside `\ifgraduate` conditions.

```
196 \newcommand{\ifdoctor}[1]{%
197   \ifstrequal{\thesistu@thesis@doctortype}{%
198     \thesistu@thesis@doctortype@doctor
199   }{#1}{}%
200 }%
201 \newcommand{\ifphd}[1]{%
202   \ifstrequal{\thesistu@thesis@doctortype}{%
203     \thesistu@thesis@doctortype@phd
204   }{#1}{}%
205 }%
```

`\thesistu@thesis@basetype` Initialize the thesis category, the type and the specific degree with error messages.

```
\thesistu@thesis@doctortype
\thesistu@thesis@thesisname
\thesistu@thesis@degreename
206 \newcommand{\thesistu@thesis@basetype}{%
207   \ClassError{thesistu}{No \string\setthesis \space issued}{%
208     Set thesis type with \string\setthesis.}%
209 }%
210 \newcommand{\thesistu@thesis@doctortype}{%
211   \ClassError{thesistu}{No \string\setthesis \space issued}{%
212     Set thesis type with \string\setthesis.}%
213 }%
214 \newcommand{\thesistu@polylingual@degreename}{%
215   \ClassError{thesistu}{No \string\setthesis \space issued}{%
216     Set thesis type with \string\setthesis.}%
217 }%
218 \newcommand{\thesistu@polylingual@thesisname}{%
219   \ClassError{thesistu}{No \string\setthesis \space issued}{%
220     Set thesis type with \string\setthesis.}%
221 }%
```

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

```
\thesistu@thesis@phd
222 \newcommand{\thesistu@thesis@bachelor}{bachelor}%
223 \newcommand{\thesistu@thesis@master}{master}%
224 \newcommand{\thesistu@thesis@doctor}{doctor}%
225 \newcommand{\thesistu@thesis@phd}{phd-school}%
```

```

\@setthesisname Internal convenience macros.
\@setdegreegreenname
\@setgendereddegreegreenname
226 \newcommand{\@setthesisname}[1]{%
227   \renewcommand{\thesistu@polylingual@thesisname}{#1}}%
228 \newcommand{\@setdegreegreenname}[1]{%
229   \renewcommand{\thesistu@polylingual@degreegreenname}{#1}}%
230 \newcommand{\@setgendereddegreegreenname}[2]{%
231   \ifmale{author}{\@setdegreegreenname{#1}}}%
232   \iffemale{author}{\@setdegreegreenname{#2}}}%
233 }%

\setthesis Sets the thesis type.

234 \newcommand{\setthesis}[1]{%
235   \ifdefstring{\thesistu@thesis@bachelor}{#1}{%

Initializes bachelor thesis type.

236     \renewcommand{\thesistu@thesis@basetype}{%
237       \thesistu@thesis@basetype@undergraduate}%
238     \@setthesisname{\thesistu@polylingual@BACHELORTHESIS}%
239     \@setdegreegreenname{\thesistu@polylingual@Bdeg}%
240   }{}%
241   \ifdefstring{\thesistu@thesis@master}{#1}{%

Initializes master thesis type.

242     \renewcommand{\thesistu@thesis@basetype}{%
243       \thesistu@thesis@basetype@undergraduate}%
244     \@setthesisname{%
245       \ClassError{thesistu}{No \string\setmasterdegree \space issued}{%
246         Set masterdegree with \string\setmasterdegree.}%
247     }%
248     \@setdegreegreenname{%
249       \ClassError{thesistu}{No \string\setmasterdegree \space issued}{%
250         Set master degree with \string\setmasterdegree.}%
251     }%
252   }{}%
253   \ifdefstring{\thesistu@thesis@doctor}{#1}{%

Initializes doctor thesis type.

254     \renewcommand{\thesistu@thesis@basetype}{%
255       \thesistu@thesis@basetype@graduate}%
256     \renewcommand{\thesistu@thesis@doctortype}{%
257       \thesistu@thesis@doctortype@doctor}%
258     \@setthesisname{\thesistu@polylingual@DOCTORHESIS}%
259     \@setdegreegreenname{%
260       \ClassError{thesistu}{No \string\setdoctordegree \space issued}{%
261         Set doctor degree with \string\setdoctordegree.}%
262     }%

```

```

263 }{}%
264 \ifdefstring{\thesistu@thesis@phd}{#1}{%

```

Initializes phd-school thesis type.

```

265 \renewcommand{\thesistu@thesis@basetype}{%
266 \thesistu@thesis@basetype@graduate}%
267 \renewcommand{\thesistu@thesis@doctortype}{%
268 \thesistu@thesis@doctortype@phd}%
269 \@setthesisname{\thesistu@polylingual@PHDTHESIS}%
270 \@setdegreegreename{\thesistu@polylingual@Pdeg}%
271 }{}%
272 }%

```

```

\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
273 \newcommand{\thesistu@thesis@mdeg@dipl}{dipl.}%
274 \newcommand{\thesistu@thesis@mdeg@master}{master}%
275 \newcommand{\thesistu@thesis@mdeg@rernat}{rer.nat.}%
276 \newcommand{\thesistu@thesis@mdeg@rersocoec}{rer.soc.oec.}%

```

`\setmasterdegree` Sets the specific master degree.

```

277 \newcommand{\setmasterdegree}[1]{%
278 \ifdefstring{\thesistu@thesis@mdeg@dipl}{#1}{%
279 \@setthesisname{\thesistu@polylingual@DIPLOMATHESES}%
280 \@setgendereddegreegreename{%
281 \thesistu@polylingual@mdegDiplMale
282 }{%
283 \thesistu@polylingual@mdegDiplFemale
284 }%
285 }{}%
286 \ifdefstring{\thesistu@thesis@mdeg@master}{#1}{%
287 \@setthesisname{\thesistu@polylingual@MASTERTHESIS}%
288 \@setdegreegreename{\thesistu@polylingual@mdegMaster}%
289 }{}%
290 \ifdefstring{\thesistu@thesis@mdeg@rernat}{#1}{%
291 \@setthesisname{\thesistu@polylingual@MASTERTHESIS}%
292 \@setgendereddegreegreename{%
293 \thesistu@polylingual@mdegRerNatMale
294 }{%
295 \thesistu@polylingual@mdegRerNatFemale
296 }%
297 }{}%
298 \ifdefstring{\thesistu@thesis@mdeg@rersocoec}{#1}{%
299 \@setthesisname{\thesistu@polylingual@MASTERTHESIS}%
300 \@setgendereddegreegreename{%
301 \thesistu@polylingual@mdegRerSocOecMale
302 }{%

```

```

303     \thesistu@polylingual@MdegRerSocOecFemale
304 }%
305 }{}%
306 }%

```

\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
307 \newcommand{\thesistu@thesis@ddeg@rernat}{rer.nat.}%
308 \newcommand{\thesistu@thesis@ddeg@techn}{techn.}%
309 \newcommand{\thesistu@thesis@ddeg@rersocoec}{rer.soc.oec.}%

```

\setdoctordegree Sets the specific doctor degree.

```

310 \newcommand{\setdoctordegree}[1]{%
311     \ifdefstring{\thesistu@thesis@ddeg@rernat}{#1}{%
312         \setgendereddegreename{%
313             \thesistu@polylingual@DdegRerNatMale
314         }{%
315             \thesistu@polylingual@DdegRerNatFemale
316         }%
317     }{}%
318     \ifdefstring{\thesistu@thesis@ddeg@techn}{#1}{%
319         \setgendereddegreename{%
320             \thesistu@polylingual@DdegTechnMale
321         }{%
322             \thesistu@polylingual@DdegTechnFemale
323         }%
324     }{}%
325     \ifdefstring{\thesistu@thesis@ddeg@rersocoec}{#1}{%
326         \setgendereddegreename{%
327             \thesistu@polylingual@DdegRerSocOecMale
328         }{%
329             \thesistu@polylingual@DdegRerSocOecFemale
330         }%
331     }{}%
332 }%

```

5.2.6 Declarations

Textual Data . Creates the required textual data entries.

```

333 \CreateData{address}%
334 \CreateData{regnumber}%
335 \CreateData{unizipcode}%
336 \CreateData{unitelnr}%
337 \CreateData{unistreet}%
338 \CreateData{unicity}%
339 \CreateData{uniwebsite}%
340 \CreateData{firstreviewerdata}%

```

```

341 \CreateData{secondreviewerdata}%
342 \CreateData{logo}%
343 \CreateData{header}%

```

Persons Creates the required person entries.

```

344 \CreatePerson{author}%
345 \CreatePerson{advisor}%
346 \CreatePerson{secondadvisor}%
347 \CreatePerson{firstassistant}%
348 \CreatePerson{secondassistant}%
349 \CreatePerson{thirdassistant}%
350 \CreatePerson{firstreviewer}%
351 \CreatePerson{secondreviewer}%

```

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

```

352 \AddLanguage{english}%
353 \AddLanguage{naustrian}%

```

PolyLinguals Creates the polylingual expressions.

```

354 \CreatePolylingual[
355   english=Advisor,
356   naustrian=Betreuung]{Advisor}%
357 \CreatePolylingual[
358   english=Second advisor]{Secondadvisor}%
359 \CreatePolylingual[
360   english=submitted in partial fulfillment of the requirements
361   for the degree of,
362   naustrian=zur Erlangung des akademischen Grades]{submission}%
363 \CreatePolylingual[
364   english=in,
365   naustrian=im Rahmen des Studiums]{in}%
366 \CreatePolylingual[
367   english=within the]{within}%
368 \CreatePolylingual[
369   english=Vienna PhD School of Informatics]{School}%
370 \CreatePolylingual[
371   english=by,
372   naustrian=eingereicht von]{by}%
373 \CreatePolylingual[
374   english=Registration Number,
375   naustrian=Matrikelnummer]{Registrationnumber}%
376 % \changes{v2.0}{2016/09/21}{added setfaculty setuniversity setinstitut}
377 \CreatePolylingual[
378   english=to the Faculty of ,
379   naustrian=an der Fakult\"at f\"ur ]{facultytext}%
380 \CreatePolylingual[

```

```

381 english=at the ,
382 naustrian=der ]{universitytext}%
383 \CreatePolylingual[
384 english= at the Institution of,
385 naustrian= am Institut f\"ur]{instituttext}%
386 % \changes{v2.1}{2016/12/08}
387 \CreatePolylingual[
388 english= from,
389 naustrian= aus]{lecturetext}%
390 \CreatePolylingual[
391 english=Assistance,
392 naustrian=Mitwirkung]{Assistance}%
393 \CreatePolylingual[
394 english=The dissertation has been reviewed by:,
395 naustrian=Diese Dissertation haben begutachtet:]{Reviewed}%
396 \CreatePolylingual[
397 english=External reviewers:]{Reviewers}%
398 \CreatePolylingual[
399 english=Vienna,
400 naustrian=Wien]{Place}%
401 \CreatePolylingual[
402 english=Declaration of Authorship,
403 naustrian=Erkl\"arung zur Verfassung der Arbeit]{StatementChapter}%
404 \CreatePolylingual[
405 english={I hereby declare that I have written this Doctoral Thesis
406 independently, that I have completely specified the utilized
407 sources and resources and that I have definitely marked all parts
408 of the work - including tables, maps and figures - which belong
409 to other works or to the internet, literally or extracted, by
410 referencing the source as borrowed.},
411 naustrian={Hiermit erkl\"are ich, dass ich diese Arbeit
412 selbst\"andig verfasst habe, dass ich die verwendeten Quellen
413 und Hilfsmittel vollst\"andig angegeben habe und dass ich die
414 Stellen der Arbeit -- einschlie{\ss}lich Tabellen, Karten und
415 Abbildungen --, die anderen Werken oder dem Internet im Wortlaut
416 oder dem Sinn nach entnommen sind, auf jeden Fall unter Angabe
417 der Quelle als Entlehnung kenntlich gemacht habe.}]{Statement}%

```

Degree titles.

```

418 \CreatePolylingual[
419 english=Bachelor of Science,
420 naustrian=Bachelor of Science]{Bdeg}%
421 \CreatePolylingual[
422 english=Master of Science,
423 naustrian=Master of Science]{MdegMaster}%
424 \CreatePolylingual[
425 english=Diplom-Ingenieur,
426 naustrian=Diplom-Ingenieur]{MdegDiplMale}%
427 \CreatePolylingual[

```



```

428 english=Diplom-Ingenieurin,
429 naustrian=Diplom-Ingenieurin]{MdegDiplFemale}%
430 \CreatePolylingual[
431 english=Magister der Naturwissenschaften,
432 naustrian=Magister der Naturwissenschaften]{MdegRerNatMale}%
433 \CreatePolylingual[
434 english=Magistra der Naturwissenschaften,
435 naustrian=Magistra der Naturwissenschaften]{MdegRerNatFemale}%
436 \CreatePolylingual[
437 english=Magister der Sozial- und Wirtschaftswissenschaften,
438 naustrian=Magister der Sozial- und Wirtschaftswissenschaften]{%
439 MdegRerSocOecMale}%
440 \CreatePolylingual[
441 english=Magistra der Sozial- und Wirtschaftswissenschaften,
442 naustrian=Magistra der Sozial- und Wirtschaftswissenschaften]{%
443 MdegRerSocOecFemale}%
444 \CreatePolylingual[
445 english=Doktor der Naturwissenschaften,
446 naustrian=Doktor der Naturwissenschaften]{DdegRerNatMale}%
447 \CreatePolylingual[
448 english=Doktorin der Naturwissenschaften,
449 naustrian=Doktorin der Naturwissenschaften]{DdegRerNatFemale}%
450 \CreatePolylingual[
451 english=Doktor der Technischen Wissenschaften,
452 naustrian=Doktor der Technischen Wissenschaften]{DdegTechnMale}%
453 \CreatePolylingual[
454 english=Doktorin der Technischen Wissenschaften,
455 naustrian=Doktorin der Technischen Wissenschaften]{DdegTechnFemale}%
456 \CreatePolylingual[
457 english=Doktor der Sozial- und Wirtschaftswissenschaften,
458 naustrian=Doktor der Sozial- und Wirtschaftswissenschaften]{%
459 DdegRerSocOecMale}%
460 \CreatePolylingual[
461 english=Doktorin der Sozial- und Wirtschaftswissenschaften,
462 naustrian=Doktorin der Sozial- und Wirtschaftswissenschaften]{%
463 DdegRerSocOecFemale}%
464 \CreatePolylingual[
465 english=Doctor of Technical Sciences]{%
466 Pdeg}%

```

Thesis types.

```

467 \CreatePolylingual[
468 english=BACHELOR'S THESIS,
469 naustrian=BACHELORARBEIT]{BACHELORTHESIS}%
470 \CreatePolylingual[
471 english=MASTER'S THESIS,
472 naustrian=MASTERARBEIT]{MASTERTHESIS}%
473 \CreatePolylingual[
474 english=DIPLOMA THESIS,

```

```

475   naustrian=DIPLOMARBEIT]{DIPLOMATHESES}%
476 \CreatePolylingual[
477   english=DISSERTATION,
478   naustrian=DISSERTATION]{DOCTORTHESIS}%
479 \CreatePolylingual[
480   english=PhD THESIS]{PHDTHESIS}%

\settitle Sets the title of the thesis.

481 \newcommand{\settitle}[2]{%
482   \CreatePolylingual[english=#1,naustrian=#2]{Title}%
483 }%

\setsubtitle Sets the subtitle of the thesis.

484 \newcommand{\setsubtitle}[2]{%
485   \CreatePolylingual[english=#1,naustrian=#2]{Subtitle}%
486 }%

\setcurriculum Sets the curriculum name.

487 \newcommand{\setcurriculum}[2]{%
488   \CreatePolylingual[english=#1,naustrian=#2]{Curriculum}%
489 }%

\setuniversity Sets the university name.

490 \newcommand{\setuniversity}[2]{%
491   \CreatePolylingual[english=#1,naustrian=#2]{university}%
492 }%

\setfaculty Sets the faculty name.

493 \newcommand{\setfaculty}[2]{%
494   \CreatePolylingual[english=#1,naustrian=#2]{faculty}%
495 }%

\setinstitut Sets the institut name.

496 \newcommand{\setinstitut}[2]{%
497   \CreatePolylingual[english=#1,naustrian=#2]{institut}%
498 }%

\setlecture Sets the lecture name.

499 \newcommand{\setlecture}[2]{%
500   \CreatePolylingual[english=#1,naustrian=#2]{lecture}%
501 }%

```

5.3 Layout

5.3.1 Setup

`\thesistu@squarebullet` Set internal convenience macros.

```
502 \newcommand{\newsetlength}[2]{%
503   \newlength{#1}%
504   \setlength{#1}{#2}%
505 }%
506 \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`

```
507 \newlength{\thesistu@tmp@parindent}%
508 \newlength{\thesistu@tmp@baselineskip}%
509 \newlength{\thesistu@tmp@parskip}%
```

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

```
510 \newcommand{\thesistu@savelayout}{%
511   \setlength{\thesistu@tmp@parindent}{\parindent}%
512   \setlength{\thesistu@tmp@baselineskip}{\baselineskip}%
513   \setlength{\thesistu@tmp@parskip}{\parskip}%
514 }%
515 \newcommand{\thesistu@restorelayout}{%
516   \setlength{\parindent}{\thesistu@tmp@parindent}%
517   \setlength{\baselineskip}{\thesistu@tmp@baselineskip}%
518   \setlength{\parskip}{\thesistu@tmp@parskip}%
519 }%
```

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.

```
520 \newsetlength{\thesistu@header@placement}{-41.49731pt}%
521 \newsetlength{\thesistu@bar@width}{511bp}%
522 \newsetlength{\thesistu@bar@height}{47bp}%
523 \newsetlength{\thesistu@bar@pivotx}{330.71bp}%
524 \newsetlength{\thesistu@bar@pivoty}{25.31bp}%
525 \newsetlength{\thesistu@logo@height}{46bp}%
526 \newsetlength{\thesistu@logo@pivotx}{4.57bp}%
527 \newsetlength{\thesistu@logo@pivoty}{5.37bp}%
528 \newsetlength{\thesistu@logo@offset@height}{\thesistu@logo@height}
```

```

529 + \thesistu@bar@pivot@y - \thesistu@logo@pivot@y}%
530 \newsetlength{\thesistu@logo@offset@x}{-\thesistu@bar@width
531 + \thesistu@bar@pivot@x - \thesistu@logo@pivot@x}%
532 \newsetlength{\thesistu@logo@offset@y}{
533 - \thesistu@bar@pivot@y + \thesistu@logo@pivot@y}%

```

\thesistu@header@titlepage Initialize header.

```

534 \newcommand{\thesistu@header@titlepage}{%
535 \centering
536 \begin{minipage}[b][\thesistu@logo@offset@height][t]{%
537 \thesistu@bar@width
538 }%
539 \includegraphics{\thesistu@data@header_header}%
540 \hspace*{\thesistu@logo@offset@x}%
541 \raisebox{\thesistu@logo@offset@y}{%
542 \includegraphics[scale=1]{\thesistu@data@logo_logo}%
543 }%
544 \end{minipage}%
545 }%

```

\thesistu@footer@titlepage Initialize footer.

```

546 \newcommand{\thesistu@footer@titlepage}{%
547 \centering
548 \begin{minipage}{\textwidth}%
549 \centering\thesistu@normalsize\sffamily
550 \thesistu@polylingual@university\
551 \thesistu@data@unizipcode\space \thesistu@data@unicity\space \thesistu@squarebullet\space
552 \thesistu@data@unistreet\space \thesistu@squarebullet\space
553 Tel.\space \thesistu@data@unitelnr\space \thesistu@squarebullet\space
554 \thesistu@data@uniwebsite%
555 \end{minipage}%
556 }%

```

thesistu@pagestyle@titlepage Generate the title page style.

```

557 \makepagestyle{thesistu@pagestyle@titlepage}%
558 \makerunningwidth{thesistu@pagestyle@titlepage}[\textwidth]{%
559 \thesistu@bar@width}%
560 \makeheadposition{thesistu@pagestyle@titlepage}{%
561 center}{center}{center}{center}%
562 \makeevenhead{thesistu@pagestyle@titlepage}{}%
563 \thesistu@header@titlepage}{}%
564 \makeoddhead{thesistu@pagestyle@titlepage}{}%
565 \thesistu@header@titlepage}{}%
566 \makefootrule{thesistu@pagestyle@titlepage}{%
567 \thesistu@pagestyle@titlepagefootrunwidth}{0.5pt}{\footruleskip}%
568 \makeevenfoot{thesistu@pagestyle@titlepage}{}%

```

```

569 \thesistu@footer@titlepage}{}%
570 \makeoddfont{thesistu@pagestyle@titlepage}{}%
571 \thesistu@footer@titlepage}{}%

```

Set style element specifications.

```

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

```

Helper functions.

```

573 \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.

```

574 \newcommand{\AdvisorBlock}{%
575   \ifundergraduate{%
576     \begin{minipage}[t][2.5cm][t]{\textwidth}%
577       \thesistu@normalsize
578       \begin{tabular}{@{}l@{ }l}%
579         \thesistu@polylingual@Advisor: &
580         \thesistu@person@advisor@fullname\\
581         \ifdef{\thesistu@person@firstassistant@def}{%
582           \thesistu@polylingual@Assistance: &
583           \thesistu@person@firstassistant@fullname\\
584         }{}%
585         \ifdef{\thesistu@person@secondassistant@def}{%
586           \ifundef{\thesistu@person@firstassistant@def}{%
587             \thesistu@person@firstassistant@error
588           }{%
589             & \thesistu@person@secondassistant@fullname\\
590           }%
591         }{}%
592         \ifdef{\thesistu@person@thirdassistant@def}{%
593           \ifundef{\thesistu@person@firstassistant@def}{%
594             \thesistu@person@firstassistant@error
595           }{%
596             \ifundef{\thesistu@person@secondassistant@def}{%
597               \thesistu@person@secondassistant@error
598             }{%
599               & \thesistu@person@thirdassistant@fullname\\
600             }%
601           }%
602         }{}%
603       \end{tabular}%
604     \end{minipage}%
605   }%
606   \ifgraduate{%
607     \begin{minipage}[t][1.6cm][t]{\textwidth}%

```

```

608 \thesistu@normalsize
609 \thesistu@polylingual@Advisor:
610 \thesistu@person@advisor@fullname
611 \ifpd{%
612 \ifdef{\thesistu@person@secondadvisor@def}{%
613 \\\
614 \thesistu@polylingual@Secondadvisor:
615 \thesistu@person@secondadvisor@fullname
616 }{}%
617 }%
618 \end{minipage}\par%
619 }%
620 }%

```

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

```

\thesistu@signature@width
\thesistu@placedate@width
621 \newsetlength{\thesistu@signature@height}{25mm}%
622 \newsetlength{\thesistu@signature@width}{51mm}%
623 \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.

```

624 \newcommand{\SignatureFields}[3][n]{%
625 {\thesistu@normalsize
626 \ifstrequal{#1}{y}{%
627 \begin{minipage}[b][\thesistu@signature@height]{%
628 \thesistu@placedate@width
629 }%
630 \thesistu@polylingual@Place,
631 \displaydate{\thesistu@date@signing}\vspace*{\baselineskip}%
632 \end{minipage}%
633 \hfill
634 }{}%
635 \ifstrequal{#1}{n}{}{}%
636 \ifstrequal{#1}{h}{%
637 \hspace*{\thesistu@placedate@width}%
638 \hfill
639 }{}%
640 \ifstreempty{#2}{%
641 \hspace*{\thesistu@signature@width}%
642 \hfill
643 }{}%
644 \begin{minipage}[b][\thesistu@signature@height]{%
645 \thesistu@signature@width

```

```

646     }%
647     \centering
648     \rule{\thesistu@signature@width}{0.5pt}\\
649     #2%
650     \end{minipage}%
651     \hfill
652 }%
653 \ifstrempy{#3}{}{%
654     \begin{minipage}[b]{\thesistu@signature@height}{%
655         \thesistu@signature@width
656     }%
657     \centering
658     \rule{\thesistu@signature@width}{0.5pt}\\
659     #3%
660     \end{minipage}%
661 }%
662 }%
663 }%

```

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

```

664 \newcommand{\ReviewerBlock}{%
665     \ifgraduate{%
666         \ifdoctor{%
667             {\thesistu@normalsize
668                 \thesistu@polylingual@Reviewed\\
669                 \SignatureFields[h]{%
670                     \thesistu@person@firstreviewer@name
671                 }{%
672                     \thesistu@person@secondreviewer@name
673                 }%
674             }%
675         }%
676         \ifphd{%
677             {\thesistu@normalsize
678                 \thesistu@polylingual@Reviewers\\
679                 \thesistu@person@firstreviewer@name.
680                 \thesistu@data@firstreviewerdata.\\
681                 \thesistu@person@secondreviewer@name.
682                 \thesistu@data@secondreviewerdata.\\
683             }%
684         }%
685     }%
686 }%

```

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

```

687 \newcommand{\SignatureBlock}{%
688     \ifundergraduate{%
689         {\thesistu@normalsize

```

```

690     \SignatureFields[y]{%
691         \thesistu@person@author@name
692     }{%
693         \thesistu@person@advisor@name
694     }%
695 }%
696 }%
697 \ifgraduate{%
698     {\thesistu@normalsize
699         \ifdoctor{%
700             \SignatureFields[y]{}{%
701                 \thesistu@person@author@name
702             }%
703         }%
704         \ifphd{%
705             \SignatureFields[y]{%
706                 \thesistu@person@author@name
707             }{%
708                 \thesistu@person@advisor@name
709             }%
710         }%
711     }%
712 }%
713 }%

```

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

```

714 \newcommand{\AddTitlePage}{
715     \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.

```

716 \newgeometry{%
717     left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
718     headsep=\thesistu@header@placement,
719     head=2\thesistu@logo@offset@height
720 }%

```

Save the current page layout lengths for later restoration.

```

721 \thesistu@savelayout
722 \setlength{\parindent}{0pt}%
723 \setlength{\baselineskip}{13.6pt}%
724 \setlength{\parskip}{0pt plus 1pt}%

```

Set title page text to helvetica.


```

725 \begin{SFFont}{phv}%
726 \sffamily
727 {\centering
728 \vspace*{0.8cm}}\par

```

Title and subtitle are bottom aligned and grow upwards.

```

729 \begin{minipage}[t][5cm][b]{\textwidth}%
730 \centering
731 \thesistu@HUGE{\bfseries\thesistu@polylingual@Title}\\
732 \bigskip
733 \thesistu@huge{\bfseries
734 \ifdef\thesistu@polylingual@Subtitle}{%
735 \thesistu@polylingual@Subtitle}{%
736 }%
737 }%
738 \end{minipage}\par
739 \thesistu@bigskip\thesistu@bigskip
740 {\thesistu@LARGE\thesistu@polylingual@thesisname}\par
741 \medskip {\thesistu@large\thesistu@polylingual@lecturetext \space \thesistu@polylingual@1
742 \thesistu@bigskip
743 {\thesistu@large\thesistu@polylingual@submission}\par
744 \medskip \ifundergraduate{%
745 {\thesistu@LARGE{\bfseries\thesistu@polylingual@degreeenamel}}\par
746 \thesistu@bigskip
747 {\thesistu@large\thesistu@polylingual@in}\par
748 \medskip {\thesistu@Large{\bfseries\thesistu@polylingual@Curriculum}}\par
749 }%
750 \ifgraduate{%
751 {\thesistu@LARGE{\bfseries\thesistu@polylingual@degreeenamel}}\par
752 \ifphd{%
753 \thesistu@bigskip
754 {\thesistu@large\thesistu@polylingual@within}\par
755 \medskip {\thesistu@LARGE{\bfseries\thesistu@polylingual@School}}\par
756 }%
757 }%
758 \thesistu@bigskip
759 {\thesistu@large\thesistu@polylingual@by}\par
760 \medskip {\thesistu@Large{\bfseries\thesistu@person@author@fullname}}\par
761 \smallskip
762 {\thesistu@large\thesistu@polylingual@Registrationnumber\
763 \thesistu@data@regnumber}\par
764 }%
765 \thesistu@bigskip\thesistu@bigskip
766 \ifgraduate{\ifphd{\vspace*{-8mm}}}%
767 \begin{minipage}[b][1.8cm][c]{\textwidth}%
768 \thesistu@normalsize%
769 \vspace{1mm}
770 % \changes{v2.0}{2016/09/21}{added}
771 \thesistu@polylingual@facultytext \space \thesistu@polylingual@faculty\\

```

```

772 \thesisu@polylingual@instituttext \space \thesisu@polylingual@institut\\
773 \thesisu@polylingual@universitytext \space \thesisu@polylingual@university\\
774 \end{minipage}
775 \vspace{1mm}
776 \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.

```

777 \vfill
778 \ReviewerBlock\par
779 \SignatureBlock\par
780 \vspace*{1cm}%
781 \end{SFFont}%
782 \pagestyle{empty}%
783 \cleardoublepage
784 \thesisu@restorelayout
785 \restoregeometry
786 }%

```

5.3.3 Front Matter Material

`\AddStatementPage` Generates the statement page.

```

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

788 %^^A \newgeometry{%
789 %^^A left=2.4cm,right=2.4cm,bottom=2.5cm,top=2cm,
790 %^^A headsep=\thesisu@header@placement,
791 %^^A head=2\thesisu@logo@offset@height
792 %^^A }%

Save the current page layout lengths for later restoration.

793 \thesisu@savelayout
794 \setlength{\parindent}{0pt}%
795 \setlength{\baselineskip}{13.6pt}%
796 \setlength{\parskip}{0pt plus 1pt}%
797 \begin{SFFont}{phv}%
798 \sffamily
799 \chapter*{\thesisu@polylingual@StatementChapter}%
800 \thesisu@person@author@fullname\\
801 \thesisu@data@address\par
802 \vspace{1.2cm}%
803 {\normalfont\thesisu@polylingual@Statement}\par
804 \vspace{1.2cm}%
805 \SignatureFields[y]{\thesisu@person@author@name}{}%
806 \end{SFFont}%

```

```

807 \cleardoublepage
808 \thesistu@restorelayout
809 %^^A \restoregeometry
810 }%

```

\addtitlepage Generates the titlepage in given language.

```

811 \newcommand{\addtitlepage}[1]{%
812   \selectlanguage{#1}%
813   \AddTitlePage
814 }%

```

\addstatementpage Generates the statement page.

```

815 \newcommand{\addstatementpage}{%
816   \selectlanguage{naustrian}%
817   \ifundergraduate{\AddStatementPage}%
818   \ifgraduate{%
819     \ifdoctor{\AddStatementPage}%
820     \ifphd{%
821       \selectlanguage{english}%
822       \AddStatementPage
823     }%
824   }%
825 }%

```

acknowledgements Generates the English acknowledgement section.

```

826 \newenvironment{acknowledgements}{%
827   \selectlanguage{english}%
828   \chapter{Acknowledgements}%
829 }{%
830   \cleardoublepage
831 }%

```

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

```

832 \newenvironment{acknowledgements*}{%
833   \selectlanguage{english}%
834   \chapter*{Acknowledgements}%
835 }{%
836   \cleardoublepage
837 }%

```

danksagung Generates the German acknowledgement section.

```

838 \newenvironment{danksagung}{%
839   \selectlanguage{naustrian}%

```

```

840 \chapter{Danksagung}%
841 }{%
842 \cleardoublepage
843 }%

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

844 \newenvironment{danksagung*}{%
845 \selectlanguage{naustrian}%
846 \chapter*{Danksagung}%
847 }{%
848 \cleardoublepage
849 }%

abstract Generates the English abstract.

850 \renewenvironment{abstract}{%
851 \selectlanguage{english}%
852 \chapter{Abstract}%
853 }{%
854 \cleardoublepage
855 }%

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

856 \newenvironment{abstract*}{%
857 \selectlanguage{english}%
858 \chapter*{Abstract}%
859 }{%
860 \cleardoublepage
861 }%

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

862 \newenvironment{kurzfassung}{%
863 \selectlanguage{naustrian}%
864 \chapter{Kurzfassung}%
865 }{%
866 \cleardoublepage
867 }%

kurzfassung* Generates the German abstract.

868 \newenvironment{kurzfassung*}{%
869 \selectlanguage{naustrian}%
870 \chapter*{Kurzfassung}%
871 }{%
872 \cleardoublepage
873 }%

```

introduction Generates the English introduction without an entry in the table of contents.

```
874 \newenvironment{introduction}{%
875   \selectlanguage{english}%
876   \section{Introduction}%
877 }{%
878   \clearpage
879 }%
```

introduction* Generates the English introduction.

```
880 \newenvironment{introduction*}{%
881   \selectlanguage{english}%
882   \section*{Introduction}%
883 }{%
884   \clearpage
885 }%
```

einleitung Generates the German introduction without an entry in the table of contents.

```
886 \newenvironment{einleitung}{%
887   \selectlanguage{naustrian}%
888   \section{Einleitung}%
889 }{%
890   \clearpage
891 }%
```

einleitung* Generates the German introduction.

```
892 \newenvironment{einleitung*}{%
893   \selectlanguage{naustrian}%
894   \section*{Einleitung}%
895 }{%
896   \clearpage
897 }%
```

5.3.4 Page Style

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

```
898 \makepagestyle{thesistu@pagestyle@default}%
899 \makeevenfoot{thesistu@pagestyle@default}{\thepage}{-}{-}%
900 \makeoddfoot{thesistu@pagestyle@default}{-}{-}{\thepage}%
```

\frontmatter Apply the default page style to the thesis.

\mainmatter

\backmatter

```
901 \aliaspagestyle{chapter}{thesistu@pagestyle@default}%
902 \aliaspagestyle{part}{thesistu@pagestyle@default}%
903 \addto\frontmatter{\pagestyle{thesistu@pagestyle@default}}%
```

904 \addto\mainmatter{\pagestyle{Ruled}}}%
905 \addto\backmatter{\pagestyle{thesistu@pagestyle@default}}}%

6 Change History

v0.9		\thesistu@thesis@doctortype@doctor:
General: Pre-release version	1	Added to support multiple
v1.0		dissertation types. Issue #4 . . . 19
General: Initial release version	1	\thesistu@thesis@doctortype@phd:
v1.1		Added to support multiple
General: Added references to the		dissertation types. Issue #4 . . . 19
GitLab environment	1	\thesistu@thesis@phd: Added to
v1.3		support multiple dissertation
\AddStatementPage: Updated to		types. Issue #4 19
support multiple languages.		General: Added support for a
Issue #4	34	dissertation at the Vienna Phd
\AddTitlePage: Added check for		School of Informatics. Issue #4 . . . 1
subtitle existence before usage.		Persons: Updated to support
Issue #1	32	second advisor. Issue #4 . . . 23
Updated to support PhD School		PolyLinguals: Added to support
mentioning and fixed the		multiple dissertation types.
associated vertical overflow.		Issue #4 23
Issue #4	32	TextualData: Updated to support
\AdvisorBlock: Updated to		external reviewer data. Issue
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#4	29	v1.4
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support multiple dissertation		General: Added comma to
types. Issue #4	31	separate posttitle and changed
\addstatementpage: Updated to		mainmatter pagestyle to
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\ifdoctor: Added to support		General: Updated name of
multiple dissertation types.		university to ‘TU Wien’. 1
Issue #4	19	PolyLinguals: Updated name of
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\setthesis: Altered to support		\thesistu@header@titlepage:
multiple dissertation types.		added ability to set logo and
Issue #4	20	header 28
\thesistu@thesis@doctortype:		General: added ability to change
Added to support multiple		footer of titlepage 28
dissertation types. Issue #4 . . .	19	added ability to change footer
		on titlepage 8

added setinstitut, setuniversity, setfaculty, added the possibility to set header and logo	1	v2.1	Textual□Data: added the abblity to change footer on titlepage .	22
added setuniversity, setfaculty, setinstitut	26		General: added appendix, added introduction, added lva in titlepage	1, 7, 8, 26, 37
added the possibility to set header and logo	7			

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