Manual to the LaTeX Doctoral and Licentiate Thesis Template for the University of Skövde

Thomas Fischer*

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1 Introduction

This manual explains the basic usage of the LaTeX Template for Doctoral Theses written and published at the University of Skövde. The template has been approved by RUFIT for official use.

This manual will not explain the general usage of TeX or LuaLaTeX; there are other materials available online. The manual assumes that you have a working installation of a full TeX distribution such as TeXLive available and you know how to perform steps like compiling TeX code into PDF files or installing and using packages (styles or classes).

2 Getting Started

Getting start with this LaTeX template follows a steep learning curve. It will definitively help to have some experience with this software, but if not, there is plenty of information available on the Internet. The Wikibooks page on LaTeX (`https://en.wikibooks.org/wiki/LaTeX`) is a good start.

Assuming you got this LaTeX template as an archive containing numerous files, get started by creating two directories: one, where you will write your dissertation in, and another which will contain the archive's unzip'ed content (so, please unzip the archive's content into this directory). Inside the directory with the unzip'ed archive, you can test if you can compile the provided example files, foremost `example-thesis.tex`, into PDF files. If you are familiar with the `make` tool, you may make use of the provided `Makefile`.

Do not proceed unless you succeed with the compilation. If you get any error messages, try to search on the Internet for help first. If that does not help, please contact your nearest LaTeX expert.

In your 'dissertation directory', create a new subdirectory called `Template`. Copy all `.sty`, `.cls`, and `.clo` files into this template directory. In case there will be an update to the template, you will have to replace only files in this directory.

To have LaTeX find this template, the path to this directory must be included in the `TEXINPUTS` environment variable. Setting this variable depends on operating system and TeX distribution, so you are advised to search the Internet for help on your specific setup. For example, on a typical Linux system with Bash as login shell, edit file `~/.bash_profile` and add a line like this:

```
export TEXINPUTS=${TEXINPUTS}:${HOME}/
  path/to/my/diss/Template//
```

It may be necessary to logout and to login again (no restart required) to have this change take effect. Still, some more files must be copied and configured before the LaTeX file can be compiled.

Create a subdirectory called `CoatOfArms` inside your dissertation directory and copy all files matching the pattern `HiSCoatOfArms-*.pdf` to this location.

Copy the bibliography `dissertation-series.bib` (list of dissertations already published at the University of Skövde) into your dissertation directory.

You may need to install some LaTeX packages on fonts. Please check Section 2.1 for details.

To test if it worked, copy the file `example-thesis.tex` into your dissertation directory and change its name to something that suites you (for example `my-thesis.tex`). To avoid compilation issues, remove the line containing `fischer2017doctoraldissertationmanual` from this `.tex` file. Now try to compile the `.tex` file.

*Email: `thomas.fischer@his.se`

During compilation, you will get warnings about missing bibliographic entries. As you will replace all bibliographic entries with your own, simply ignore those warnings.

2.1 Fonts

By default, the font 'Georgia' is to be used for the main text body and 'Arial' or 'Helvetica' for captions and alike. As 'Georgia' is a commercial font, it cannot be provided with this template. As a replacement for 'Arial' or 'Helvetica', the font 'Nimbus Sans L' is provided in a separate archive (`fonts-from-git-nsa.zip`). For monospaced text, the font 'DejaVu Mono' is used, also shipped in the same separate archive. Please read the documentation that comes with this archive on how to install those fonts.

Usage of fonts for this template is pre-configured in `hisfont.sty`.

2.2 Bibliography

The example dissertation comes with two BibTEX files: `example-bibliography.bib` and `dissertation-series.bib`. The former file contains just examples, so you can ignore it in your dissertation. Best replace it directly with your own bibliography (search for a matching `\addbibresource` line in the provided `.tex` files).

The latter file contains a list of previously published dissertations. It will be automatically included by the template on the dissertation's last pages, but you must check before submitting your dissertation that this bibliography is up-to-date. If you are aware of missing entries, report them to Thomas Fischer.

[1] `https://ctan.org/pkg/babel`

3 Basic Usage

It is recommended to start from the provided example files.

3.1 Metadata like Author, Title, or Publication Type

As metadata like the author's name (your name?), title, or publication type are used in several documents (the thesis document, the cover page, ...), the definition of this data is made separately in a file called `metadata.tex`.

It is recommended that you start from the provided example and set the values according to your thesis. An abbreviated example (missing some fields) looks like this:

```
\title{Some Interesting Title}
\subject{Informatics}
\date{1970}{1}{1}
\isbn{979-123-456-789}
\printshop{Acme Printing Corp.}
\seriesnumber{42}
\author{Hein Blöd}
\dissertationtype{filosofie doktorsexamen}
\dissertationarea{informationsteknologi}
\publicationtype{dissertation}
```

Commands used in `metadata.tex` are defined in package `hismetadata`. Once this package is loaded, the metadata can be included into your document by issuing `\input{metadata}`. The provided example files already make use of this package.

The difference between `\dissertationtype` and `\publicationtype` is as follows:

`\dissertationtype` is a human-readable label, used for example on the title page. It may be an arbitrary text in English or Swedish such as `filosofie doktorsexamen`.

`\publicationtype` may only be either `dissertation`, `licentiate`, `thesisproposal`, or `researchproposal`. It is used internally by the template to control various formatting parameters where the types of publications differ (e. g. colors).

The command `\seriesnumber` is the designated number of this dissertation/licentiate thesis in the University of Skövde's own dissertation series. Please contact the librarian in charge for further information.

3.2 Language

This thesis template supports both English and Swedish texts. You have to set your thesis language as an option for the `\documentclass` command. For English texts, use the option `english`, for Swedish texts, use `swedish`. The American English variant is used, other flavors such as British English (`british`) are not supported.

```
\documentclass[english]{his-thesis}
```

This option affects the Babel[1] package, which controls among others how words get hyphenated. Irrespective if you provide `english` or `swedish` as the class option, **both** languages will be loaded for Babel. The language you specified as a class option, however, will be used as the default language. You can switch between both language at any time using Babel's `\selectlanguage` command.

Selecting a language as class option will affect certain labels. For example, the table of contents will get the

caption ‘Innehåll’ instead of the English variant ‘Contents’. Please observe that the translation from English to Swedish is incomplete. Translation contributions are welcome, please send them to Thomas Fischer.

4 Bibliography

The template provides you with the basic tools and settings to integrate BibTeX databases into your thesis. You have to load at least the package `hisbibliography` as demonstrated in the example thesis document.

Please note the following differences: Bibliographies are stored in a text format defined by the BibTeX tool in the 1980s using the file extension `.bib`, thus called ‘BibTeX databases’ or ‘BibTeX files’. The package allowing to make use of bibliographies inside of LaTeX is called `biblatex`, which allows to customize the use and formatting of references and bibliographies to a large extent. The command line tool `biber` is a modern replacement for BibTeX’s command line tool `bibtex`; both process `.bib` files for the use in LaTeX, although `biber` is to be preferred due to its support for Unicode.

To make use of BibTeX files, you can load them using the `\addbibresource` command provided by the `biblatex` package (automatically included through the `hisbibliography` package). One command invocation is necessary for every BibTeX file.

```
\addbibresource{myownpublications.bib}
\addbibresource{otherpublications.bib}
```

To cite references, use the family of `\cite` commands. The list of references at the end of the dissertation will be printed with the command `\listofreferences`. The command `\dissertationlist` prints the list of previously published dissertations (taken from `dissertation-series.bib`).

4.1 Customization

From the BibLaTeX documentation: ‘Recurring author and editor names are replaced by a dash unless the entry is the first one on the current page or double-page spread.’ To disable the usage of dashes, edit in file `hisbibliography.sty` the line containing `\RequirePackage[...]{biblatex}` and add `dashed=false` as a new option into the comma-separated list of options within the square brackets.

4.2 Own Relevant Articles

A dedicated bibliography of selected publications of yours, preferably those with relevance to your dissertation, can be added to the front matter. Typically before `\tableofcontents`, add a specialized environment:

```
\begin{ownpublications}
Some text here.
% Add commands like \authorspublication
  or \highrelevancepublications here
\end{ownpublications}
```

Inside the `ownpublications` environment, you can choose from a number of different commands on how to add your bibliography:

- Just print a list of publications in a numeric list (similar to an `enumerate` list). Simply provide the BibTeX keys in a comma-separated list.

  ```
  \authorspublications{doe2016basic,
    doe2017fundamentals,
    doe2018advancedstuff}
  ```

  If you want to make comments on your contributions, see the command `\authorspublication` (no ‘s’ at the end) further below.

- If you want to categorize your publications into ‘high relevance’ and ‘low relevance’, use the following two commands:

  ```
  \highrelevancepublications{
    doe2017fundamentals,
    doe2018advancedstuff}
  \lowrelevancepublications{doe2016basic}
  ```

  Each of the two lists will be prepended with captions ‘Publications with High Relevance’ and ‘Publications with Low Relevance’, respectively. Numbering of bibliographic items will continue from one list to the other.

- Adding single bibliographic item, but optionally append a comment for your contributions.

  ```
  \authorspublication[Just copy and
    paste from my
    colleagues.]{doe2016basic}
  \authorspublication{doe2018advancedstuff}
  ```

Although it is technically possible to use all four different commands in an `ownpublications` environment, it is not recommended.

5 Previously Published Articles

In case a section containing full, verbatim pages from previously published articles is to be included, use the environment `fullarticles` and inside this environment use the command `\fullarticle` as exemplified below:

```
\begin{fullarticles}
\fullarticle{bibtexkey1}{path/to/pdffile}
\fullarticle[scale=.75,trim={1cm 1cm 1cm
  2cm},clip=true,pages=-
  ]{bibtexkey2}{path/to/anotherpdffile}
\end{fullarticles}
```

The optional argument for `\fullarticle` as used for the second article in above example contains arguments that will be passed to the command `\includepdf`, which allows among others to

- select a range of pages from the PDF file to be included (use `pages=-` to select and show all pages), and to
- scale, trim, and clip the PDF document's pages to fit into your dissertation.

If this optional argument is omitted, `pages=-` is used as default. Setting options, but omitting a `pages` value will include only the PDF file's first page. See the documentation for the package `pdfpages`[2] for details and more examples.

Note: to avoid problems when generating the 'final' version of the thesis, `scale` options should go before `trim` options as seen in above example.
Tip: To figure out the right scaling and trimming of the included papers, use `\includepdf`'s `frame=true` option. For the final version, you may replace it with `clip=true`.

The environment `fullarticles` will create a new entry to the table of contents labeled 'Previously Published Articles'. To change this label, provide an alternative label as an optional argument:

```
\begin{fullarticles}[My Publications]
```

Each `\fullarticle` will create an entry to the table of contents as well (below the entry created by the environment), using the title from the bibliography entry referred to in the first mandatory argument passed to the command. This way, the same title is automatically reused from your existing bibliography

Used articles will appear in the automatically generated bibliography.

[2] `https://ctan.org/pkg/pdfpages`
[3] `https://ctan.org/pkg/minted`

6 Source Code Listings

To include source code or configuration file listings, make use of the package `minted`[3]. It will make use of the external programm `pygmentize` which needs to be installed separately. This external program does need to be invoked by the user like `biber`, but is called from within `minted`. To enable this, the LaTeX compliler must be allowed to execute external programs (a potential security risk, thus denied by default) by passing the command line argument `-shell-escape`.

This is a simple example how `minted` is used:

```
\begin{minted}{latex}
This source code fragment is \LaTeX\ code.
\end{minted}
```

Alternatively, external source code files can be included as well. This is useful if the source code to be highlighted interferes with the text editor's attempt to parse it as LaTeX code.

```
\inputminted{c++}{test.cpp}
```

7 Printing a Draft: Two Pages on One

To print a draft, such as for proof-reading, the class `hisdraftforprinting` is provided. It will put two pages of the dissertation next to each other, i. e. when printing in duplex mode, four pages of the dissertation will be printed on one sheet of paper. The current date and time, your name as specified in the meta data, and a warning that this print is a draft will be printed on the paper as well.

To create a draft, simply create a new LaTeX document that looks like this, simply replacing the path to the PDF document to be used for the draft print:

```
\documentclass{hisdraftforprinting}

% The file 'metadata.tex' contains the
  user's metadata such as title, name,
  ISBN, ...
\input{metadata}

\begin{document}
\dissertationpdf{path/to/thesis-pdf-file}
\end{document}
```

The text that this print is a draft only can be configured by an optional argument passed to the `\dissertationpdf` command:

```
\dissertationpdf[CONTAINS UNPUBLISHED
  MATERIAL]{path/to/thesis-pdf-file}
```

8 LaTeX Life Hacks

PDF files may contain text that is not part of the document body but are shown separately in your PDF viewer, such as the table of contents or the document's title. In those text fields, LaTeX code is not correctly rendered. For example, if you would write

```
\section{A class of finite models to
  distinguish the terms $\Omega_n$}
```

will only look correct in the shown PDF document, but not in the separate table of contents.

To mitigate this problem, two different texts may be provided: one, that contains valid LaTeX code to be used in the document, and another which is just 'text' to be used 'outside' of the document. The LaTeX command for this is `\texorpdfstring` which takes two mandatory arguments. See the following example:

```
\section{A class of finite models to       ↙
  distinguish the terms                    ↙
  \texorpdfstring{$\Omega_n$}{Ωₙ}}
```

The second argument contains two Unicode characters: 'Greek captial letter Omega' (0x03a9) and 'Latin subscript small letter N' (0x2099).