

# Thesis Title

if needed with a  
subtitle

MASTER THESIS

by

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# Abstract

Write your abstract here. It should be structured like “introduction - solution - aim of the thesis”.



# Acknowledgements

The acknowledgments and the people to thank go here, don't forget to include your project advisor...



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# List of Abbreviations

**LAH** List Abbreviations Here  
**WSF** What (it) Stands For



## Chapter 1

# Template Guide

The content in this chapter is from the original L<sup>A</sup>T<sub>E</sub>X Thesis Template, which you can find [here](#). It has been adapted for the Web Science programme at TH Köln.

### 1.1 Welcome and Thank You

Welcome to this L<sup>A</sup>T<sub>E</sub>X Thesis Template, a beautiful and easy to use template for writing a thesis using the L<sup>A</sup>T<sub>E</sub>X typesetting system.

If you are writing a thesis (or will be in the future) and its subject is technical or mathematical (though it doesn't have to be), then creating it in L<sup>A</sup>T<sub>E</sub>X is highly recommended as a way to make sure you can just get down to the essential writing without having to worry over formatting or wasting time arguing with your word processor.

L<sup>A</sup>T<sub>E</sub>X is easily able to professionally typeset documents that run to hundreds or thousands of pages long. With simple mark-up commands, it automatically sets out the table of contents, margins, page headers and footers and keeps the formatting consistent and beautiful. One of its main strengths is the way it can easily typeset mathematics, even *heavy* mathematics. Even if those equations are the most horribly twisted and most difficult mathematical problems that can only be solved on a super-computer, you can at least count on L<sup>A</sup>T<sub>E</sub>X to make them look stunning.

### 1.2 Learning L<sup>A</sup>T<sub>E</sub>X

L<sup>A</sup>T<sub>E</sub>X is not a WYSIWYG (What You See is What You Get) program, unlike word processors such as Microsoft Word or Apple's Pages. Instead, a document written for L<sup>A</sup>T<sub>E</sub>X is actually a simple, plain text file that contains *no formatting*. You tell L<sup>A</sup>T<sub>E</sub>X how you want the formatting in the finished document by writing in simple commands amongst the text, for example, if I want to use *italic text for emphasis*, I write the `\emph{text}` command and put the text I want in italics in between the curly braces. This means that L<sup>A</sup>T<sub>E</sub>X is a "mark-up" language, very much like HTML.

#### 1.2.1 A (not so short) Introduction to L<sup>A</sup>T<sub>E</sub>X

If you are new to L<sup>A</sup>T<sub>E</sub>X, there is a very good eBook – freely available online as a PDF file – called, "The Not So Short Introduction to L<sup>A</sup>T<sub>E</sub>X". The book's title is typically shortened to just *lshort*. You can download the latest version (as it is occasionally updated) from here: <http://www.ctan.org/tex-archive/info/lshort/english/lshort.pdf>

It is also available in several other languages. Find yours from the list on this page: <http://www.ctan.org/tex-archive/info/lshort/>

It is recommended to take a little time out to learn how to use  $\LaTeX$  by creating several, small ‘test’ documents, or having a close look at several templates on:

<http://www.LaTeXTemplates.com>

Making the effort now means you’re not stuck learning the system when what you *really* need to be doing is writing your thesis.

### 1.2.2 A Short Math Guide for $\LaTeX$

If you are writing a technical or mathematical thesis, then you may want to read the document by the AMS (American Mathematical Society) called, “A Short Math Guide for  $\LaTeX$ ”. It can be found online here: <http://www.ams.org/tex/amslatex.html> under the “Additional Documentation” section towards the bottom of the page.

### 1.2.3 Common $\LaTeX$ Math Symbols

There are a multitude of mathematical symbols available for  $\LaTeX$  and it would take a great effort to learn the commands for them all. The most common ones you are likely to use are shown on this page: <http://www.sunilpatel.co.uk/latex-type/latex-math-symbols/>

You can use this page as a reference or crib sheet, the symbols are rendered as large, high quality images so you can quickly find the  $\LaTeX$  command for the symbol you need.

### 1.2.4 $\LaTeX$ on a Mac

The  $\LaTeX$  distribution is available for many systems including Windows, Linux and Mac OS X. The package for OS X is called MacTeX and it contains all the applications you need – bundled together and pre-customized – for a fully working  $\LaTeX$  environment and work flow.

MacTeX includes a custom dedicated  $\LaTeX$  editor called TeXShop for writing your ‘.tex’ files and BibDesk: a program to manage your references and create your bibliography section just as easily as managing songs and creating playlists in iTunes.

## 1.3 Getting Started with this Template

If you are familiar with  $\LaTeX$ , then you should explore the directory structure of the template and then proceed to place your own information into the *THESIS INFORMATION* block of the `main.tex` file. You can then modify the rest of this file to your unique specifications based on your degree/university. Section 1.5 on page 4 will help you do this. Make sure you also read section 1.7 about thesis conventions to get the most out of this template.

If you are new to  $\LaTeX$  it is recommended that you carry on reading through the rest of the information in this document.

Before you begin using this template you should ensure that its style complies with the thesis style guidelines imposed by your institution. In most cases this template style and layout will be suitable. If it is not, it may only require a small change to bring the template in line with your institution’s recommendations. These modifications will need to be done on the `MastersDoctoralThesis.cls` file.



### 1.3.1 About this Template

This L<sup>A</sup>T<sub>E</sub>X Thesis Template is originally based and created around a L<sup>A</sup>T<sub>E</sub>X style file created by Steve R. Gunn from the University of Southampton (UK), department of Electronics and Computer Science. You can find his original thesis style file at his site, here: <http://www.ecs.soton.ac.uk/~srg/softwaretools/document/templates/>

Steve's `ecsthesis.cls` was then taken by Sunil Patel who modified it by creating a skeleton framework and folder structure to place the thesis files in. The resulting template can be found on Sunil's site here: <http://www.sunilpatel.co.uk/thesis-template>

Sunil's template was made available through <http://www.LaTeXTemplates.com> where it was modified many times based on user requests and questions. Version 2.0 and onwards of this template represents a major modification to Sunil's template and is, in fact, hardly recognisable. The work to make version 2.0 possible was carried out by Vel and Johannes Böttcher.

## 1.4 What this Template Includes

### 1.4.1 Folders

This template comes as a single zip file that expands out to several files and folders. The folder names are mostly self-explanatory:

**Appendices** – this is the folder where you put the appendices. Each appendix should go into its own separate `.tex` file. An example and template are included in the directory.

**Chapters** – this is the folder where you put the thesis chapters. A thesis usually has about six chapters, though there is no hard rule on this. Each chapter should go in its own separate `.tex` file and they can be split as:

- Chapter 1: Introduction to the thesis topic
- Chapter 2: Background information and theory
- Chapter 3: (Laboratory) experimental setup
- Chapter 4: Details of experiment 1
- Chapter 5: Details of experiment 2
- Chapter 6: Discussion of the experimental results
- Chapter 7: Conclusion and future directions

This chapter layout is specialised for the experimental sciences, your discipline may be different.

**Figures** – this folder contains all figures for the thesis. These are the final images that will go into the thesis document.

### 1.4.2 Files

Included are also several files, most of them are plain text and you can see their contents in a text editor. After initial compilation, you will see that more auxiliary files are created by L<sup>A</sup>T<sub>E</sub>X or BibT<sub>E</sub>X and which you don't need to delete or worry about:

**example.bib** – this is an important file that contains all the bibliographic information and references that you will be citing in the thesis for use with BibTeX. You can write it manually, but there are reference manager programs available that will create and manage it for you. Bibliographies in L<sup>A</sup>T<sub>E</sub>X are a large subject and you may need to read about BibTeX before starting with this. Many modern reference managers will allow you to export your references in BibTeX format which greatly eases the amount of work you have to do.

**MastersDoctoralThesis.cls** – this is an important file. It is the class file that tells L<sup>A</sup>T<sub>E</sub>X how to format the thesis.

**main.pdf** – this is your beautifully typeset thesis (in the PDF file format) created by L<sup>A</sup>T<sub>E</sub>X. It is supplied in the PDF with the template and after you compile the template you should get an identical version.

**main.tex** – this is an important file. This is the file that you tell L<sup>A</sup>T<sub>E</sub>X to compile to produce your thesis as a PDF file. It contains the framework and constructs that tell L<sup>A</sup>T<sub>E</sub>X how to layout the thesis. It is heavily commented so you can read exactly what each line of code does and why it is there. After you put your own information into the *THESIS INFORMATION* block – you have now started your thesis!

Files that are *not* included, but are created by L<sup>A</sup>T<sub>E</sub>X as auxiliary files include:

**main.aux** – this is an auxiliary file generated by L<sup>A</sup>T<sub>E</sub>X, if it is deleted L<sup>A</sup>T<sub>E</sub>X simply regenerates it when you run the main .tex file.

**main.bbl** – this is an auxiliary file generated by BibTeX, if it is deleted, BibTeX simply regenerates it when you run the main.aux file. Whereas the .bib file contains all the references you have, this .bbl file contains the references you have actually cited in the thesis and is used to build the bibliography section of the thesis.

**main.blg** – this is an auxiliary file generated by BibTeX, if it is deleted BibTeX simply regenerates it when you run the main .aux file.

**main.lof** – this is an auxiliary file generated by L<sup>A</sup>T<sub>E</sub>X, if it is deleted L<sup>A</sup>T<sub>E</sub>X simply regenerates it when you run the main .tex file. It tells L<sup>A</sup>T<sub>E</sub>X how to build the *List of Figures* section.

**main.log** – this is an auxiliary file generated by L<sup>A</sup>T<sub>E</sub>X, if it is deleted L<sup>A</sup>T<sub>E</sub>X simply regenerates it when you run the main .tex file. It contains messages from L<sup>A</sup>T<sub>E</sub>X, if you receive errors and warnings from L<sup>A</sup>T<sub>E</sub>X, they will be in this .log file.

**main.lot** – this is an auxiliary file generated by L<sup>A</sup>T<sub>E</sub>X, if it is deleted L<sup>A</sup>T<sub>E</sub>X simply regenerates it when you run the main .tex file. It tells L<sup>A</sup>T<sub>E</sub>X how to build the *List of Tables* section.

**main.out** – this is an auxiliary file generated by L<sup>A</sup>T<sub>E</sub>X, if it is deleted L<sup>A</sup>T<sub>E</sub>X simply regenerates it when you run the main .tex file.

So from this long list, only the files with the .bib, .cls and .tex extensions are the most important ones. The other auxiliary files can be ignored or deleted as L<sup>A</sup>T<sub>E</sub>X and BibTeX will regenerate them.

## 1.5 Filling in Your Information in the main.tex File

You will need to personalise the thesis template and make it your own by filling in your own information. This is done by editing the main.tex file in a text editor or your favourite LaTeX environment.

Open the file and scroll down to the third large block titled *THESIS INFORMATION* where you can see the entries for *University Name*, *Department Name*, etc ...

Fill out the information about yourself, your group and institution. You can also insert web links, if you do, make sure you use the full URL, including the http://

for this. If you don't want these to be linked, simply remove the `\href{url}{name}` and only leave the name.

When you have done this, save the file and recompile `main.tex`. All the information you filled in should now be in the PDF, complete with web links. You can now begin your thesis proper!

## 1.6 The `main.tex` File Explained

The `main.tex` file contains the structure of the thesis. There are plenty of written comments that explain what pages, sections and formatting the  $\text{\LaTeX}$  code is creating. Each major document element is divided into commented blocks with titles in all capitals to make it obvious what the following bit of code is doing. Initially there seems to be a lot of  $\text{\LaTeX}$  code, but this is all formatting, and it has all been taken care of so you don't have to do it.

Begin by checking that your information on the title page is correct. For the thesis declaration, your institution may insist on something different than the text given. If this is the case, just replace what you see with what is required in the `DECLARATION PAGE` block.

Following this is the abstract page which summarises your work in a condensed way and can almost be used as a standalone document to describe what you have done. The text you write will cause the heading to move up so don't worry about running out of space.

Next come the acknowledgements. On this page, write about all the people who you wish to thank (not forgetting parents, partners and your advisor/supervisor).

The contents pages, list of figures and tables are all taken care of for you and do not need to be manually created or edited. The next set of pages are more likely to be optional and can be deleted since they are for a more technical thesis: insert a list of abbreviations you have used in the thesis, then a list of the physical constants and numbers you refer to and finally, a list of mathematical symbols used in any formulae. Making the effort to fill these tables means the reader has a one-stop place to refer to instead of searching the internet and references to try and find out what you meant by certain abbreviations or symbols.

The list of symbols is split into the Roman and Greek alphabets. Whereas the abbreviations and symbols ought to be listed in alphabetical order (and this is *not* done automatically for you) the list of physical constants should be grouped into similar themes.

Finally, there is the block where the chapters are included. Uncomment the lines (delete the `%` character) as you write the chapters. Each chapter should be written in its own file and put into the `Chapters` folder and named `Chapter1`, `Chapter2`, etc... Similarly for the appendices, uncomment the lines as you need them. Each appendix should go into its own file and placed in the `Appendices` folder.

After the preamble, chapters and appendices finally comes the bibliography. The bibliography style (called *authoryear*) is used for the bibliography and is a fully featured style that will even include links to where the referenced paper can be found online. Do not underestimate how grateful your reader will be to find that a reference to a paper is just a click away. Of course, this relies on you putting the URL information into the BibTeX file in the first place.

## 1.7 Thesis Features and Conventions

To get the best out of this template, there are a few conventions that you may want to follow.

One of the most important (and most difficult) things to keep track of in such a long document as a thesis is consistency. Using certain conventions and ways of doing things (such as using a Todo list) makes the job easier. Of course, all of these are optional and you can adopt your own method.

### 1.7.1 Printing Format

This thesis template is designed for double sided printing (i.e. content on the front and back of pages) as most theses are printed and bound this way. Switching to one sided printing is as simple as uncommenting the *oneside* option of the `documentclass` command at the top of the `main.tex` file. You may then wish to adjust the margins to suit specifications from your institution.

The headers for the pages contain the page number on the outer side (so it is easy to flick through to the page you want) and the chapter name on the inner side.

The text is set to 11 point by default with single line spacing, again, you can tune the text size and spacing should you want or need to using the options at the very start of `main.tex`. The spacing can be changed similarly by replacing the *singlespacing* with *onehalfspacing* or *doublespacing*.

### 1.7.2 Using US Letter Paper

The paper size used in the template is A4, which is the standard size in Europe. If you are using this thesis template elsewhere and particularly in the United States, then you may have to change the A4 paper size to the US Letter size. This can be done in the margins settings section in `main.tex`.

Due to the differences in the paper size, the resulting margins may be different to what you like or require (as it is common for institutions to dictate certain margin sizes). If this is the case, then the margin sizes can be tweaked by modifying the values in the same block as where you set the paper size. Now your document should be set up for US Letter paper size with suitable margins.

### 1.7.3 References

The `biblatex` package is used to format the bibliography and inserts references such as this one Hawthorn, Weber, and Scholten, 2001. The options used in the `main.tex` file mean that the in-text citations of references are formatted with the author(s) listed with the date of the publication. Multiple references are separated by semicolons (e.g. (Wieman and Hollberg, 1991; Hawthorn, Weber, and Scholten, 2001)) and references with more than three authors only show the first author with *et al.* indicating there are more authors (e.g. (Arnold et al., 1998)). This is done automatically for you. To see how you use references, have a look at the `Chapter1.tex` source file. Many reference managers allow you to simply drag the reference into the document as you type.

Scientific references should come *before* the punctuation mark if there is one (such as a comma or period). The same goes for footnotes<sup>1</sup>. You can change this but the most important thing is to keep the convention consistent throughout the thesis.

---

<sup>1</sup>Such as this footnote, here down at the bottom of the page.

Footnotes themselves should be full, descriptive sentences (beginning with a capital letter and ending with a full stop). The APA6 states: “Footnote numbers should be superscripted, [...], following any punctuation mark except a dash.” The Chicago manual of style states: “A note number should be placed at the end of a sentence or clause. The number follows any punctuation mark except the dash, which it precedes. It follows a closing parenthesis.”

The bibliography is typeset with references listed in alphabetical order by the first author’s last name. This is similar to the APA referencing style. To see how L<sup>A</sup>T<sub>E</sub>X typesets the bibliography, have a look at the very end of this document (or just click on the reference number links in in-text citations).

### A Note on bibtex

The bibtex backend used in the template by default does not correctly handle unicode character encoding (i.e. "international" characters). You may see a warning about this in the compilation log and, if your references contain unicode characters, they may not show up correctly or at all. The solution to this is to use the biber backend instead of the outdated bibtex backend. This is done by finding this in `main.tex`: `backend=bibtex` and changing it to `backend=biber`. You will then need to delete all auxiliary BibTeX files and navigate to the template directory in your terminal (command prompt). Once there, simply type `biber main` and `biber` will compile your bibliography. You can then compile `main.tex` as normal and your bibliography will be updated. An alternative is to set up your LaTeX editor to compile with biber instead of bibtex, see [here](#) for how to do this for various editors.

### 1.7.4 Tables

Tables are an important way of displaying your results, below is an example table which was generated with this code:

```
\begin{table}
\caption{The effects of treatments X and Y on the four groups studied.}
\label{tab:treatments}
\centering
\begin{tabular}{l l l}
\toprule
\thead{Groups} & \thead{Treatment X} & \thead{Treatment Y} \\
\midrule
1 & 0.2 & 0.8 \\
2 & 0.17 & 0.7 \\
3 & 0.24 & 0.75 \\
4 & 0.68 & 0.3 \\
\bottomrule
\end{tabular}
\end{table}
```

You can reference tables with `\ref{<label>}` where the label is defined within the table environment. See `Chapter1.tex` for an example of the label and citation (e.g. Table 1.1).

TABLE 1.1: The effects of treatments X and Y on the four groups studied.

Groups	Treatment X	Treatment Y
1	0.2	0.8
2	0.17	0.7
3	0.24	0.75
4	0.68	0.3

### 1.7.5 Figures

There will hopefully be many figures in your thesis (that should be placed in the *Figures* folder). The way to insert figures into your thesis is to use a code template like this:

```
\begin{figure}
\centering
\includegraphics{Figures/Electron}
\decoRule
\caption[An Electron]{An electron (artist's impression).}
\label{fig:Electron}
\end{figure}
```

Also look in the source file. Putting this code into the source file produces the picture of the electron that you can see in the figure below.



---

FIGURE 1.1: An electron (artist's impression).

Sometimes figures don't always appear where you write them in the source. The placement depends on how much space there is on the page for the figure. Sometimes there is not enough room to fit a figure directly where it should go (in relation to the text) and so  $\LaTeX$  puts it at the top of the next page. Positioning figures is the job of  $\LaTeX$  and so you should only worry about making them look good!

Figures usually should have captions just in case you need to refer to them (such as in Figure 1.1). The `\caption` command contains two parts, the first part, inside the square brackets is the title that will appear in the *List of Figures*, and so should be short. The second part in the curly brackets should contain the longer and more descriptive caption text.

The `\decoRule` command is optional and simply puts an aesthetic horizontal line below the image. If you do this for one image, do it for all of them.

$\LaTeX$  is capable of using images in pdf, jpg and png format.

### 1.7.6 Typesetting mathematics

If your thesis is going to contain heavy mathematical content, be sure that  $\LaTeX$  will make it look beautiful, even though it won't be able to solve the equations for you.

The "Not So Short Introduction to  $\LaTeX$ " (available on [CTAN](#)) should tell you everything you need to know for most cases of typesetting mathematics. If you need more information, a much more thorough mathematical guide is available from the AMS called, "A Short Math Guide to  $\LaTeX$ " and can be downloaded from: <ftp://ftp.ams.org/pub/tex/doc/amsmath/short-math-guide.pdf>

There are many different  $\LaTeX$  symbols to remember, luckily you can find the most common symbols in [The Comprehensive  \$\LaTeX\$  Symbol List](#).

You can write an equation, which is automatically given an equation number by  $\LaTeX$  like this:

```
\begin{equation}
E = mc^{2}
\label{eqn:Einstein}
\end{equation}
```

This will produce Einstein's famous energy-matter equivalence equation:

$$E = mc^2 \tag{1.1}$$

All equations you write (which are not in the middle of paragraph text) are automatically given equation numbers by  $\LaTeX$ . If you don't want a particular equation numbered, use the unnumbered form:

```
\[ a^{2}=4 \]
```

## 1.8 Sectioning and Subsectioning

You should break your thesis up into nice, bite-sized sections and subsections.  $\LaTeX$  automatically builds a table of Contents by looking at all the `\chapter{}`, `\section{}` and `\subsection{}` commands you write in the source.

The Table of Contents should only list the sections to three (3) levels. A `\chapter{}` is level zero (0). A `\section{}` is level one (1) and so a `\subsection{}` is level two (2). In your thesis it is likely that you will even use a `\subsubsection{}`, which is level three (3). The depth to which the Table of Contents is formatted is set within `MastersDoctoralThesis.cls`. If you need this changed, you can do it in `main.tex`.

## 1.9 In Closing

You have reached the end of this mini-guide. You can now rename or overwrite this pdf file and begin writing your own Chapter1.tex and the rest of your thesis. The easy work of setting up the structure and framework has been taken care of for you. It's now your job to fill it out!

Good luck and have lots of fun!

Guide written by —  
Sunil Patel: [www.sunilpatel.co.uk](http://www.sunilpatel.co.uk)  
Vel: [LaTeXTemplates.com](http://LaTeXTemplates.com)



## Chapter 2

# Tips and Hints

In this chapter, a few more tips and hints are given for Web Science students.

### 2.1 Tables

In this section, an example for a table is given:

TABLE 2.1: Here you can insert a longer **HEADER** for the table

Text	12%
Text	34%
Text	56%
Text	78%
Text	90%

These are just examples - tables can have very different appearances. You can play along with tables - the following might be an alternative:

TABLE 2.2: Another table with coloured headline

numbers	text
1	This text flush-left
2	while the numbers are
3	centred

Please note, that the labels of tables appear above while labels of figures appear underneath.

The creation of tables can be exhausting, you might make use of this helpful tools:

- Excel to  $\text{\LaTeX}$  Converter  
<http://www.heise.de/download/excel2latex.html>
- Apple Script: Numbers to  $\text{\LaTeX}$   
<https://gist.github.com/pgundlach/386384>
- Gnumeric (has an export function for  $\text{\LaTeX}$ ):  
<https://projects.gnome.org/gnumeric/>

- OpenOffice, Calc2LaTeX: <http://extensions.openoffice.org/de/project/calc2latex-macro-converting-openofficeorg-calc-spreadsheets-latex-tables>

This is a reference for the first table 2.1, and here the reference is to the alternative table 2.2 Note, that you should give every table, figure, section, chapter, etc. an individual label, so that you can use this for reference if needed.

## 2.2 Figures

This is an example how you can include a figure

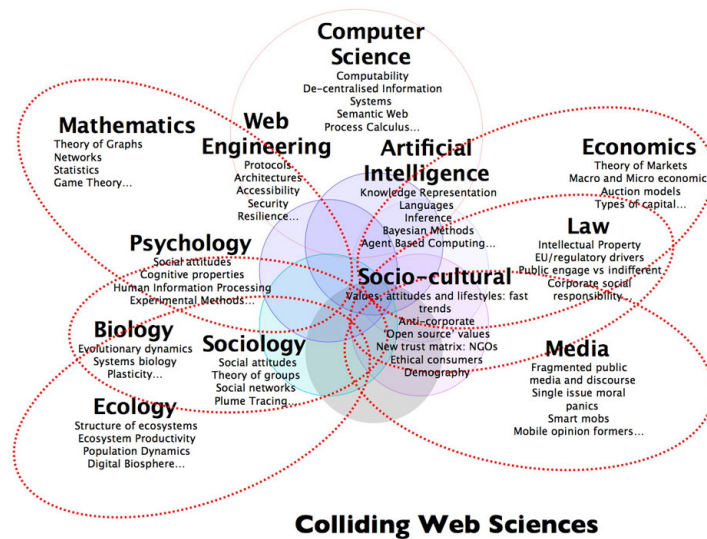


FIGURE 2.1: Here you insert the caption of the figure (Surname, 2009)

It is also important to indicate the source of the figure. In this case in the bibtex file an online resource is inserted and referred to here.

## 2.3 Quotations

In this section, an example for a literal quotation is given.

*“A persona is a rich picture of an imaginary person who represents your core user group.”* (Dix et al., 2004)

Alternative you can also write the L<sup>A</sup>T<sub>E</sub>X code like this:

*“A persona is a rich picture of an imaginary person who represents your core user group.”* (Dix et al., 2004)

The compiled output is the same.

Sometimes you might want to make use of the authors name within the text. Before, we used the command `citep{}`, which creates the brackets around author name and year. You can also use the `citet` command like this:

Dix et al. (2004) defined the concept of persona as follows:

*“A persona is a rich picture of an imaginary person who represents your core user group.” (Dix et al., 2004)*

Here, the brackets are only around the year. You may notice, that this increases the readability of the text. If you use the `cite` command (i.e., no "t" or "p"), the year is printed without brackets: Dix et al., 2004.

According to APA format<sup>1</sup> there are some rules, when and how to include page numbers, when referring to literature.

*“Include page numbers for any citations in the text of your paper that include direct quotations or refer to a specific part of the work you are referencing. Direct quotations must include a page number as part of the citation. The quoted material should be followed by a citation in parentheses that gives the author’s name, the year in which the work was published, and the page number from which the quoted material appears.” (Hall, 2013)*

Check out the example and recommendations of Hall (2013) on [http://www.ehow.com/how\\_5689799\\_cite-numbers-apa-format.html](http://www.ehow.com/how_5689799_cite-numbers-apa-format.html). In  $\LaTeX$  you can include the pages very easy. For example:

Baddeley and Hitch (1974, p. 86) stated:

*“We hope that our preliminary attempts to begin answering the question will convince the reader, not necessarily that our views are correct, but that the question was and is well worth asking” (Baddeley and Hitch, 1974, p. 86)*

Note that in the first reference, we used `citet [] {}` in order to have brackets just around year and page number; later we used `citep [] {}`.

You have different options to create quotation marks. Since a package is included here you can make it like this:

- Using the package `csquotes`. Code `\enquote{example}` produces “example”
- Or this code `‘‘example’’` produces “example”
- Or this code `"example"` produces "example".

You might notice that this alternative quotation marks look differently!

If you have to cite website, you can find valuable recommendations on the APA blog, how to do that: <http://blog.apastyle.org/apastyle/2010/11/how-to-cite-something-you-found-on-a-website-in-apa-style.html>. In order to make sure, that these references do not change or disappear, you can archive them, e.g. via <https://webcitation.org/>. The following is an example for a website which was archived there: Hartmann, 2013.

## 2.4 References within the document

If you want to refer to you own chapters, figures, tables or the like, you can make use of the `ref{}`  command, like we did in section 2.1 on page 11. Here we refer to figure 2.1 on page 12. As you may notice, when you take a look at the  $\LaTeX$  Code, you don’t have to check the page numbering, even if you re-structure your document. We use the `pageref{}`  command for that.

<sup>1</sup> American Psychological Association (APA)

## 2.5 Footnotes and Enumerations

Sometimes footnotes can be useful, but keep in mind, that an extensive use of footnotes can decrease the readability<sup>2</sup>.

### 2.5.1 Example for subsections

You might make use of subsections as well. Please note, that if you create a section / subsection, these should be followed by another one. It is uncommon to have just one section within a chapter or just one subsection within a section. See for example the writing tips by Dave Patterson:

*“Its strange to have a single subsection (e.g., 5.2.1 in section 5.2). Why do you need to number it if there is only one? Either eliminate the single subsection, or change the part that precedes the subsection into a second subsection”*  
(Patterson, 2013)

### 2.5.2 Subsection for enumeration examples

In this subsection some examples for enumerations are given. First you see an un-numbered enumeration:

- Item 1
- Item 2
- Item 3

which is followed by a numbered enumeration:

1. Item 1
2. Item 2
3. Item 3

If you like (and it’s appropriate) you might also make use of symbols:

- Item 1
- Item 2
- Item 3

Since it decreases the readability and clarity,  $\LaTeX$  will not list a subsubsection in the table of content. If you want to make use of them anyway, this is how to do it:

#### Example for subsubsection

The following is just a placeholder text: *Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.*

<sup>2</sup> because the reader’s flow of reading is interrupted!

### Yet another subsection

The following is just a placeholder text: *Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.*

**Paragraph as alternative** Here not the `subsection{}` command has been used - a paragraph can also be used to create a subsection, which has no number and doesn't appear in the table of content. Compared to the `subsection{}` command, here the text will start directly after the headline. Especially, when you don't have that much content, this might be more appropriate

## 2.6 The Description Environment

If you want to describe some concepts, an enumeration or subsection is not the best way to do it. Here as an alternative you see the *description environment*, which can be very helpful:

**Concept** Definition of the concept: *Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.*

**Notion** Definition of the notion: *Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.*



## Appendix A

# Frequently Asked Questions

### A.1 How do I change the colors of links?

The color of links can be changed to your liking using:

```
\hypersetup{urlcolor=red}, or  
\hypersetup{citecolor=green}, or  
\hypersetup{allcolor=blue}.
```

If you want to completely hide the links, you can use:

```
\hypersetup{allcolors=.}, or even better:  
\hypersetup{hidelinks}.
```

If you want to have obvious links in the PDF but not the printed text, use:

```
\hypersetup{colorlinks=false}.
```





# Bibliography

- Arnold, A. S., J. S. Wilson, M. G. Boshier, and J. Smith (1998). "A Simple Extended-Cavity Diode Laser". In: *Review of Scientific Instruments* 69.3, pp. 1236–1239. URL: <http://link.aip.org/link/?RSI/69/1236/1>.
- Baddeley, Alan D and Graham Hitch (1974). "Working memory". In: *Psychology of learning and motivation*, pp. 47–89.
- Dix, Alan, Janet E. Finlay, Gregory D. Abowd, and Russell Beale (2004). *Human-Computer Interaction*. 3. ISBN 0-13-046109-1. Essex, England: Pearson Education Limited.
- Hall, Shane (2013). *How to Cite Page Numbers in APA Format*. Last accessed 16 July 2013. URL: [http://www.ehow.com/how\\_5689799\\_cite-numbers-apa-format.html](http://www.ehow.com/how_5689799_cite-numbers-apa-format.html).
- Hartmann, Lukas F. (2013). *My deadly disease was just a bug*. Accessed: 6 March 2016. Archived by WebCite at <http://www.webcitation.org/6focRrhyo>. URL: <http://mntmn.com/pages/23andme.html>.
- Hawthorn, C. J., K. P. Weber, and R. E. Scholten (2001). "Littrow Configuration Tunable External Cavity Diode Laser with Fixed Direction Output Beam". In: *Review of Scientific Instruments* 72.12, pp. 4477–4479. URL: <http://link.aip.org/link/?RSI/72/4477/1>.
- Patterson, Dave (2013). *Dave Patterson's Writing Advice*. Last accessed 16 July 2013. URL: <http://www.cs.berkeley.edu/~pattrsn/talks/writingtips.html>.
- Surname, First Name (2009). *This is a test entry of type @ONLINE*. Last accessed 16 July 2013. URL: <http://today.slac.stanford.edu/images/2009/colloquium-web-collide.jpg>.
- Wieman, Carl E. and Leo Hollberg (1991). "Using Diode Lasers for Atomic Physics". In: *Review of Scientific Instruments* 62.1, pp. 1–20. URL: <http://link.aip.org/link/?RSI/62/1/1>.



## Declaration of Authorship

I hereby declare that this master thesis was independently composed and authored by myself.

All content and ideas drawn directly or indirectly from external sources are indicated as such. All sources and materials that have been used are referred to in this thesis.

The thesis has not been submitted to any other examining body and has not been published.

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Place, date

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Signed: Jane SMITH