



## Table of Contents

1	Structure of the Thesis .....	2
1.1	Front Page and Table of Contents .....	2
1.2	List of Figures and Tables .....	3
1.3	List of Abbreviations and Symbols .....	3
1.4	Layout of Text and Format .....	3
1.5	Reference List.....	3
1.6	Appendix.....	3
1.7	Other Components .....	3
1.8	Form of the Thesis and Submission.....	4
2	Suggestions regarding Content and Style.....	4
2.1	Outline .....	4
2.2	Structure of the Thesis .....	4
2.3	Literature.....	4
2.4	Text.....	5
3	Figures, Tables and Mathematical Formulas .....	5
3.1	Figures.....	5
3.2	Tables.....	6
3.3	Mathematical Formulas .....	6
4	Citing and References .....	6
4.1	Reference List.....	7
4.2	Examples for different citations in the Reference List .....	8



## Introduction to Academic Writing

(Effective: April 2020)

There are certain principles of academic writing you should keep in mind when writing your thesis. These principles help the reader get a clear and structured overview of the content of your paper and let the reader follow your train of thought.

### 1 Structure of the Thesis

The guidelines of the examination office (“Wiso-Prüfungsamt”), such as the Statutory Declaration, are compulsory. To find out more about the examination regulations (“Prüfungsordnung”), regarding dissertations, please visit the examination office’s website:

For examination regulations of 2015, please click this link:

<https://www.wiso.uni-koeln.de/de/fakultaet/dekanat/pruefungsaemter/po-2015/abschlussarbeiten/>

For examination regulations of 2008, please click this link:

<https://www.wiso.uni-koeln.de/de/fakultaet/dekanat/pruefungsaemter/po-20072008/abschlussarbeiten/>

(Status: April 2020).

#### 1.1 Front Page and Table of Contents

The examination office provides a template for the front page of bachelor thesis. Please check their website since guidelines change regularly.

Before starting with the actual content of your thesis, you have to insert a table of contents that shows all the page numbers. The numbering of pages starts with the text. For numbering the lists (List of Figures, Tables, etc.), please use Roman numbers. For the layout of the outline, please use decimal numbering. For an example, please see below:

<b>Inhaltsverzeichnis</b>	
Abbildungsverzeichnis .....	II
Tabellenverzeichnis .....	III
Abkürzungsverzeichnis .....	IV
Symbolverzeichnis .....	V
1. Gliederungspunkt 1. Stufe .....	1
1.1 Gliederungspunkt 2. Stufe .....	#
1.1.1 Gliederungspunkt 3. Stufe .....	#
1.1.2 .....	#
1.2 .....	#
2 .....	#
2.1 .....	#
2.2 .....	#
Anhang .....	#
Literaturverzeichnis .....	#

The Table of Contents itself is **not** given a page number.



### 1.2 List of Figures and Tables

Figures and Tables are numbered consecutively (e.g. referring to different chapters/sections) and have to be mentioned in the List of Figures and Tables with the corresponding page number. For more details, see Section 3.

### 1.3 List of Abbreviations and Symbols

All used abbreviations (even the ones from the reference list or other lists) have to be explained in the List of Abbreviations – as long as they are not common. An abbreviation is common if can be found in a dictionary. Should any symbols be used, please list them in the List of Symbols.

### 1.4 Layout of Text and Format

All sections from the outline are repeated in the text. The pure text (without outline, lists and appendix) should have the following format:

- spacing of 1.5,
- margins of the pages: Left: 4 cm, Right: 2,5 cm, Upper: 2,5 cm, Lower: 2,5 cm
- format “full justification”

You should use the font „Times New Roman“ with a size of 12pt. The thesis should be 25 pages long (not including table of contents, list of abbreviations, list of tables and figures, and appendix). All figures and tables are included in the 25 pages.

In addition to the formatting rules, you should pay attention to grammar rules and orthography.

The headings start with capital letters. Please stick to the following guidelines:

- 1 Headings of chapters, 16 pt., bold
- 1.1 Headings of the first subsection, 14 pt., bold
- 1.1.1 Headings of the second subsection, 12 pt., bold

### 1.5 Reference List

A Reference Lists with all of your cited sources needs to be included in your thesis. All citations should enable the reader to trace them back to the original source. The sources have to be arranged in alphabetical order by the name of the first author. For all citations in the text, please use the Harvard citation style. Examples for this citation style can be found in section 4.2.

### 1.6 Appendix

You can include additional information in the appendix that contributes to the deeper understanding of your thesis but would disturb in the main body. Examples can be program codes, long mathematical proofs or data material. The appendix should **not** be used for evading the allowed number of pages!

### 1.7 Other Components

The guidelines for bachelor thesis require a signed statutory declaration. This declaration includes date and location of the signature and a predefined text. It has to be enclosed as a loose paper (Status: April 2020). The corresponding form can be found on the website of the examination office.



### 1.8 Form of the Thesis and Submission

Please check the homepage of the examination office for the current guidelines (particularly notice the section „In what form should the thesis be submitted?“):

<https://www.wiso.uni-koeln.de/de/fakultaet/dekanat/pruefungsaemter/po-2015/abschlussarbeiten/>

<https://www.wiso.uni-koeln.de/de/fakultaet/dekanat/pruefungsaemter/po-20072008/abschlussarbeiten/>

## 2 Suggestions regarding Content and Style

In the following, we make a few suggestions regarding the content and style of your bachelor thesis. In addition to that, the following literature provides more information concerning academic writing:

- Anfertigung wissenschaftlicher Arbeiten (Alfred Brink)
- Die Technik wissenschaftlichen Arbeitens (Norbert Franck & Joachim Stary)
- The Pyramid principle (Barbara Minto)
- The Elements of Style (William Strunk Jr. & E.B. White)

### 2.1 Outline

The outline should be chosen such that your train of thought is clear. However, please note that the outline is not a plain listing! The level of detail in the outline gives information about the depth of your work. Each section should have at least two subsections. If one subsection includes several concepts, it could make sense to subdivide it further.

It is recommended to avoid empty ones such as „Basics“ or „Fundamentals“ as subsections.

### 2.2 Structure of the Thesis

In the introduction, the problem and the purpose of investigation have to be described precisely. Excessive descriptions that are only indirectly connected with the problem should be avoided. In addition, you should describe the method (e.g. literature review, modelling, etc.) and the resulting structure of your thesis.

To enable a better understanding of the thesis, you should define all essential terms and concepts at the beginning of the thesis.

In the main body, you give the reader a deeper and detailed insight into the problem. Depending on the purpose of investigation and the approach, that could be literature research, development of own methods, or critical assessments.

Whether the study objective (that has been described in the introduction) was achieved should be stated in the conclusion. At this point, please avoid a summary of your entire thesis. Instead, you should summarize and comment the most important results. Please keep in mind that a negative result (e.g. a result which states that the proposed method is not suitable for solving the problem) can also be a result.

### 2.3 Literature

In academic writing it is essential to cite every thought you have not developed yourself in an accurate way. The use of other people's intellectual property has to be labelled as that. Common statements such as „The profit equals the difference between revenue and expenses“ are excluded from this rule.



You have to consider which type of statement you want to quote. Word-for-word citations are only recommended if the specific statement is very incisive. Indirect citations in your own words are usually preferred. The simple concatenation of citations should be avoided.

It is important to critically assess the utilized literature. Every expressed thought must be checked for its validity. It is necessary to reflect about the material and use it in your thesis in a logical way. Although sources often contain valuable material, the terminology and notation of the author can differ and thus be inconsistent with other sources. In that case, you should pay attention to the consistency of your own statements. You are responsible for explaining your own propositions. A simple cross reference is not sufficient.

## 2.4 Text

It is important that you are consistent in your reasoning. Your argumentation should be precise and nonredundant. Avoid empty phrases, tautology and empty rhetoric and scan every sentence for valuable content.

Evaluative phrases such as „better“, „suitable“ or „appropriate“ should be justified with the underlying rationale.

Always use the correct economic terms (e.g., „inexpensive“ instead of „cheap“).

The wording should be consistent (e.g., do not switch between „firm“ and „company“).

In German academic papers you should not use the first person singular or plural. However, this does not apply to English papers. What you should avoid here is the passive.

You should always keep in mind that by writing an academic paper, you are showing your verbal skills and your diligence. Linguistic errors make it difficult for the reader to work through your paper.

## 3 Figures, Tables and Mathematical Formulas

For the sake of clarity, figures and tables can be used. They should be part of the text, not of the appendix. Every figure or table has to be referred to and explained in the text. The figure or table should be placed near the corresponding text. It does not have to be at the beginning of a page.

### 3.1 Figures

Unnecessary figures are to be avoided, particularly those figures whose content could be summarized in only a few precise sentences. Figures taken from external sources have to be labelled accordingly. Moreover, it is recommended to create them yourself. Mere copies should be avoided.

#### Checklist for figures:

- Is the figure necessary?
- Is the figure simple, easy recognizable and does it not contain unnecessary details?
- Is the positioning of the heading consistent (i.e. always below or above the figure)?
- Is the figure legible?
- Is the caption legible and does it go with the figure?
- Is the spelling correct?
- Are all abbreviations and symbols explained (in a legend, caption or footnote)?
- Are all abbreviations, symbols, the terminology and language of the figure consistent with the caption of the figure? And as well with other figures and with the text?



- If the figure or its data was taken from another source, is it cited correctly?
- Are all figures numbered consecutively with Arabic numbers?
- Are all figures mentioned in the text?

### 3.2 Tables

Example for a table:

Table 4.1 Daily Demand Forecast by Product

Product	Mean (SD)	95 % CI	
		LL	UL
A	14.5 (28.6)	5.4	23.6
B	31.8 (33.2)	21.2	42.4

Note. SD = standard deviation, CI = confidence interval, LL = lower limit, UL = upper limit.

Checklist for tables:

- Is the table necessary?
- Are all tables structured consistently?
- Is the title short und comprehensible?
- Is the caption positioned consistently (i.e. always below or above the table)?
- Does every column have a heading?
- If the table or its data was taken from another source, is it cited correctly?
- Are all tables numbered consecutively with Arabic numbers?
- Are all tables mentioned in the text?

### 3.3 Mathematical Formulas

If you use mathematical formulas in your paper, please add all symbols to the List of Symbols together with their definition.

If you use different mathematical models or formulas from different authors, please make sure that you align the used symbols with each other to ensure better understanding and comparability.

In addition, the formulas have to be explained in the text. To simplify the process of referring to the formulas, it is recommended to number them. The numbering can be done with regard to the models or consecutively.

## 4 Citing and References

Whenever you use another person's intellectual property, you have to label it by adding a citation. The sources have to be shown in a simple and unambiguous way. They have to enable the reader to trace them back. You should always try to find and use the primary source.

Please use the Harvard citation style. For further information regarding this citation style, click this link:

[https://www.charite.de/fileadmin/user\\_upload/portal/forschung/gute-wiss-praxis/Harvard-Methode\\_Kurzfassung\\_.pdf](https://www.charite.de/fileadmin/user_upload/portal/forschung/gute-wiss-praxis/Harvard-Methode_Kurzfassung_.pdf) (in German)



In the case of word-for-word reproduction, make sure to maintain the identity of the citation. Even unusual spelling or punctuation has to be adopted from the source. If you want to leave one or several words out, please indicate that by putting dots into squared brackets ([...]). Complements have to be written in brackets as well. Your own translations should be labelled as that. The part you cite directly should be placed in (double) quotation marks. Citations within a citation should have single quotation marks. Long citations can be highlighted by using an indented paragraph.

If a source is cited indirectly, no quotation marks are needed/ allowed. However, you should make it clear that the knowledge and the ideas you are using are not your own. Every direct or indirect reproduction has to be labeled with a citation as follows:

- Surname of the author (if there are two authors, both names are connected with “and”; if there are three or more authors, only the surname of the first author is mentioned and “et al.” is added)
- Year of publication, e.g. 2009
- Page number, if relevant (with abbreviation “p.” for page)

If you are quoting something directly or indirectly, it is highly recommended to add the corresponding page number (this can be applied to all types of literature, such as journals, books, articles, ...). If the citation refers to an entire article or book, page numbers are not needed.

### Examples:

- The computing effort depends on how the demand is distributed (Tempelmeier 2006, S. 620).
- Lee et al. (1997) analyze four sources of the bullwhip effect.

Scripts or notes from the lecture are considered as unpublished and thus cannot be cited. The citability of daily newspapers, magazines and internet websites should be discussed with the supervisor. If there are several editions of a source, always stick to the recent edition.

## 4.1 Reference List

All citations in the Reference List should be in the Harvard citation style. A citation contains the following information:

- The name of the author,
- The title,
- — for monographs — the edition, the publishing house, and the year of publication,
- — for articles in magazines — the volume, the year of publication, the issue, first and last page of the article,
- — for conference contributions — the editor, the title of the conference proceedings, the name, place and time period of the conference, the year of publication, and first and last page of the contribution,
- — for contributions in compilations — the editor, the title of the compilation, the edition, the place of publication, the publishing house, the year of publication, the first and last page of the contribution,
- — for online sources — the URL and the access date

All cited sources have to appear in the reference list. They are arranged in alphabetical order by the surname of the first author. If one author has several publications, the year of publications is used for sorting. In the case of several publications in the same year, lower-case letters are used (e.g. “Thonemann 2001a”).



The Reference List is **not** created separately for different kinds of sources (books, papers, websites, etc.). The sources are only listed separately here to clarify how different types of sources require different information.

In order to simplify the management of literature, there are specific literature management programs, such as *Citavi*, *Zotero* or *Mendeley* with plug-ins or add-ins for Word. We highly recommend to use such a program. As an alternative, you can use the literature management of Word that allows you to create a reference list automatically. We do not recommend creating the reference list manually. This is very time-consuming and more importantly prone to error.

## 4.2 Examples for different citations in the Reference List

### Articles in journals and magazines

Fisher, M. L., Raman, A., McClelland, A. 2000. Rocket science retailing is almost here – Are you ready? *Harvard Business Review* **78**(4) 115-124.

Tempelmeier, H. 2006. Supply Chain Inventory Optimization with two customer classes in discrete time. *European Journal of operational Research* **174** 321-339.

Tversky, A., Kahneman, D. 1974. Judgment under uncertainty. Heuristics and biases. *Science* **185**(4157) 1124-1131.

### Articles in reviewed editions and Proceedings

Bolotin, V. 1994. Telephone circuit holding-time distributions. J. Labetoulle, J. W. Roberts, eds. *Proceedings of the International Teletraffic Congress, ITC 14*. North-Holland, Amsterdam, Netherlands, 125–134.

Cachon, G. P. 2003. Supply chain coordination with contracts. S. Graves, T. de Kok, eds. *Handbook of Operations Research and Management Science: Supply Chain Management*. Elsevier, Amsterdam, Netherlands, 227–339.

Kahneman, D., Frederick, S. 2002. Representativeness revisited. Attribute substitution in intuitive judgment. T. Gilovich, D. Griffin, D. Kahneman, eds. *Heuristics and biases. The psychology of intuitive judgment*. Cambridge University Press, New York, 49–81.

### Books

Cachon, G. P., Terwiesch, C. 2009. *Matching supply with demand. An introduction to operations management*. 3rd ed. Irwin/McGraw-Hill, Boston, MA.

Hopp, W., Spearman, M. 1996. *Factory physics*. Irwin/McGraw-Hill, New York.

Thonemann, U. 2010. *Operations Management. Konzepte, Methoden und Anwendungen*. 3rd ed. Pearson Studium, München.

### Working Papers

Schultz, K. L., McClain, J. O., Robinson, L. W., Thomas, L. J. 2007. The use of framing in inventory decisions. Working paper, Cornell University, Ithaca, NY.

### Websites

Supply Chain Council. 2013. Supply Chain Operations Reference (SCOR) model – Overview – Version 10.0. Available online at <https://supply-chain.org/f/SCOR-Overview-Web.pdf>, checked on 26/02/2018.