

**Guidelines for writing a Scientific Paper**  
**– Term papers, bachelor and master theses –**

## **PREFACE**

This guideline on how to write a bachelor thesis, master thesis or term paper is based on the same-named guideline of the „Fachausschuss für Studium und Lehre ASL“ of the University of Applied Sciences Bingen am Rhein, department 1, in the version from 07/11/2011. It has been adapted to the particular requirements of the Institute for Sanitary Engineering and Waste Management of the Leibniz Universität Hannover.

The present guideline should support students in writing their first scientific paper. The structure and outer shape of an academic work are important factors in the evaluation. However, as a basic principle the formal rules – like the presentation of contents – always have to be agreed on with the supervisor of the respective thesis. Their expectations are decisive after all.

Additional information on further literature may be found at the end of this document.

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## 1 General notes

By writing a bachelor or master thesis the author has to prove to be able to work independently and scientifically within a predetermined time period. This means, depending on the assigned tasks, that relevant literature has to be systematically reviewed and critically discussed. In experimental papers it is also a task to develop and display own empiric analysis including conclusions or logic answers.

The same applies to term papers, which are an important preparation for future bachelor or master theses.

The thesis has to be turned in at the office of the institute, which is responsible for examinations or to the professor (during the official hours) **on the due date**.

Turn in the thesis as a printout as well as electronically on a data medium (PDF). Special rules apply for protected papers.

In contrast to dissertations and often master theses, bachelor and project theses are not intended for publication. Nevertheless an **exact adherence to the formal requirements** has to be minded. This includes correct grammar, punctuation, terminology, consequent classification and accurate handling of used sources.

There are no clear rules for the **number of pages**, including the list of literature. However, a bachelor or master thesis usually contains 60 to 100 pages. Since topic and literature may require certain exceptions, the amount of pages should be discussed with the supervisor. For term papers and project theses a smaller number of pages is required.

The paper has to be written in a **text processing program** on a computer. DIN A4 paper, printed on one side, has to be used. The font should be **ARIAL** (type size 11). Special fonts like cursive should be used only for accentuation.

The text is to be written in **grouped style**. Words are to be spaced by hand or automatically in a way that no large spaces appear in a line. Headings have to be **left-aligned**.

**Scientific designations** are cursive for convention, for example *E. coli*. **Units and indices** should be in standard lettering. Units and numbers should be separated by non-breaking space.

Use own **accentuation** very cautiously. Only headings may be highlighted by underlining. Apart from that accentuation may be done by **s p a c i n g** and **bold** writing.

The **margin width** (print space) should be:

- right hand 2 cm
- left hand 3.5 cm (for binding)
- bottom 2.5 cm
- top to first line 2.5 cm

The type area is to be used to entirely.

Arabic numerals for **page numbering in different text components** (page 1 is the first page of the introduction) have to be used. Paging continues with bibliography and attachments. All pages **before the text** are to be numbered with Roman numeral continuously.<sup>1</sup>

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<sup>1</sup> for page numbering of the annex see chapter 2.2.9

Regarding the positioning of the page numbers various options are possible:

The number may be placed 2 cm below the top of the paper in the middle of the page, enclosed in dashes. Another valid option is a header, including chapter number and -name on the left as well as the page number on the right, both underlined. Generally a consistent arrangement within the paper is very important. **No continuative page numbers** are to be stated on the bottom of the page.

**Line spacing** is 1.2. Footnotes and longer quotations are single spaced in smaller lettering (type size 9 or 10, space character before and after). Spacing in between paragraphs, intervals and chapters and the layout of headlines may be chosen individually, but have to be **consistent** throughout the whole script. For better legibility of the text paragraphs should not be spaced by just one single line break. In reverse, paragraphs serve as a content structuring of a continuous text. In this respect not every sentence displays an own thought (= paragraph).

The **beginning of a main chapter** (chapter 1, 2, etc.) starts on a new page. This does not apply for sub chapters.

It is advisable to **print a sample** first, since the settings might be different from one printer to another due to various drivers. It makes sense to save the document as a PDF to prevent displacements while printing on an external printer. Make sure to save a **backup copy** of the paper.

**Proofreading and format checking** is highly recommended. If the paper includes any linking, figures, tablets, or formula, errors may occur by editing or converting to PDF. After months of working on the thesis own errors are less likely to be noticed. Therefore it is advisable to let another person check the paper on spelling, grammar and format. It is also advisable to use a spell checking program and optionally a program to check for plagiarism.

**Once again:** Always discuss the formal and content-related requirements of the thesis with the supervisor.

## 2 Formal elements of a thesis or term paper

### 2.1 Formal structure of the thesis

A final or term paper consists of the following parts (the order is **mandatory**):

- envelope cardboard
- front page
- signed task/objectives of the tutor
- statement of authorship
- if applicable foreword or preface
- table of contents
- if applicable list of abbreviations
- if applicable list of figures
- if applicable list of tables
- if applicable list of maps
- brief summary (if required by the supervisor)
- text (including introduction and summary)
- references
- if applicable list of annexes
- if applicable annex
- if applicable declaration on ownership and copyright (declared under oath)
- envelope cardboard (if applicable including an internally mounted bag for CD-ROMs and / or maps)

### 2.2 Formal elements in detail

In the following the formal components of a thesis are explained in more detail.

#### 2.2.1 Front page

The front page of the thesis should include the following information (see annex for layout):

1. University: Leibniz Universität Hannover (if applicable logo of the university)
2. Faculty: Faculty of civil engineering and geodesy
3. Institute:
4. Course of studies
5. Title of the thesis
6. Character of the thesis: bachelor thesis, master thesis or term paper
7. Submitted on: Date
8. Surname, first name

The front page does **not** have a page number.

Also, when writing a thesis, a definition of the task signed by the supervisor goes right behind the title page.

This page does **not** bear a page number either.

### 2.2.2 Statement of authorship

The statement of authorship should be on a new page which is provided as a template by the ISAH.

### 2.2.3 Preface and preliminary remarks

For special occasions the text of your thesis may be preceded by a preamble or preface.

A **preface** only includes personal notes of the author, for example notes about the reason and motivation for drafting the work or acknowledgements. Objective remarks on the subject, the purpose or the methodological structure of the work as well as definitions do not belong into the preface. The preface shall be provided with location, date of writing and the name of the author. First person may be used (**only** in the preface!).

**Preliminary remarks** contain references to particular difficulties, incomplete sections or difficulties in obtaining literature as well as the remark about a non-finished work in case of illness.

Preface and preliminary remarks may receive a Roman page numbering. In this case they must be noted in the table of contents, however without a chapter number.

### 2.2.4 Table of contents

The table of contents lists **all components** of the thesis or term paper dealing with the subjects with the relevant page number, including chapter numbers:

- Preface / Preliminary remarks (if existing, not mandatory)
- list of abbreviations (if existing)
- list of figures, tables, maps (if existing)
- structure of the text (necessary)
- list of references (necessary)
- list of annex (if existing)
- annex (if existing)

The headline must be **TABLE OF CONTENTS**; the syntax (for example centered, in capital letters or bold) is left to the author. The table of contents page gets a Roman number.

The table of contents intends to show the way the topic was understood and handled. Further, it reflects the **logical structure** of the work. Since the table of contents is the first information about the work, it has to be written in a **comprehensive** way, indicating the content **short but accurate** by expressing the titles of the different chapters fully. The chapter numbers must be completely identical with the chapter headings. Abbreviation may not be used in the headers.

The table of contents must demonstrate a logically correct structure. Chapters and Sub-chapters that are ranked equally must be at the same level in the table of contents.

In **subdivisions** it must be ensured that for example sub item 1.1 is followed by sub item 1.2. In each level have to be at least two subdivisions.

Headings of sub-chapters should **not be literal repetitions** of the superior chapter heading (for example 3 Earth and nature; 3.1 Earth; 3.2 Nature).



For a clear and comprehensible thesis, a too detailed breakdown into sub-chapters are to be avoided. This means the structure should be limited to a maximum of four steps (1 Chapter, 1.1 Sub-chapter, 1.1.1 Sub-sub-chapter, 1.1.1.1 Three-sub-chapter). Further subdivisions may be made by paragraphs or indents.

There are several ways to formally range the outline<sup>2</sup>. For convenience the common, decadal classification is presented here.

#### Examples for a decadal classification:-

- 1        **Overview of the internal sources of information**
  - 1.1      Oral teaching possibilities of employees
    - 1.1.1    Appraisal interviews and briefings with individuals and groups
    - 1.1.2    Service meetings and conferences and their problems
  - 1.2      Written educational opportunities and its problems
    - 1.2.1    Circular letters and its efficiency
    - 1.2.2    Business- and social reports
- 2        **Dependence of internal information and communication from the leadership style**
  - 2.1      Correlation between leadership and communication
  - 2.2      Internal communications in an authoritarian leadership style

After the last digit of an outline point, no point is to be set.

#### **2.2.5 Index of abbreviations**

Abbreviations used in the text that are **not commonly known** should be listed with their explanations. Such abbreviations listed in the dictionary as generally understandable may be used without limitation. They do not require inclusion into the list of abbreviations (examples: e.g., i.e., cf., etc.).

However, if thematic or specialized abbreviations that are not covered in the dictionary are used, their inclusion in the list of abbreviations is **mandatory**. Even if an abbreviation is used only once. If a specific abbreviation or unit is introduced at one point, it must be used continuously in the following.

#### Example:

COD: Chemical oxygen demand

Important: Abbreviations in borrowed tables and figures are to be included in the list as well.

Composing own abbreviations is generally not permitted, unless the clarity and readability are not affected and the achieved space saving justifies their use. Law designations, comment abbreviations and journal titles as well as internet abbreviations that are used in the paper must be covered in the list of abbreviations accurately.

<sup>2</sup> for alternatives see further literature, chapter 5

## Examples:

WM&R: Waste Management & Research

### 2.2.6 List of tables and figures

If the paper includes tables and figures, a list of tables and figures **must** be made. All figures (also pictures) and tables are provided with serial numbers and a table or figure title in the text. In the list images or tables are included according to their order with title and page number. However, an indication of sources is **not** required in the list of tables / figures. For more information on the design of figures and tables see chapter 2.2.7.

### 2.2.7 Text

The text includes all remarks on the subject. The content is to be formulated shortly, clearly and concisely (objectively neutral, not casual-journalistic). Nested sentences, flowers of speech and the use of first person should be avoided. Negligent formulations are difficult to understand for the reader and give the impression of a general sloppy approach. Keep in mind that in general a paper must be processed **multiple times**, until it reaches the required linguistic quality.

#### Content structure of the text part

The text should address the following points:

- Problem and objective (included in the introduction)
- State of knowledge and prior research (literature review)
- Hypotheses (in experimental work)
- Material and methods
- Presentation of the material used and / or the study area
- Presentation of experimental setup and method of the analysis
- Presentation of results
- Critical evaluation and discussion of results (discussion) with conclusions
- Summary

However, the points listed here must **not necessarily be used as separate** headings in the paper. Especially for experimental work (with own test results or studies which are based on its own data) it is recommended to develop the problem, the state of research about the problem, the consequential hypothesis and a specific objective already in the introduction (more detail below).

The **hierarchy** of the text outline in the main- and sub-chapters is visible through a corresponding name with decimal places and must be identical to the table of contents. Subheadings have to visually reflect an outline of the text.

In the introduction the **problem** and the **objective** has to be explained from a superior view. Also, the own work should be classified in the field of research and defined regarding the chosen topic. In this chapter it is explained

- a) The specific problem (What is the problem to which an experiment / a study was made?)
- b) The expected new knowledge (What knew knowledge should be obtained?)

Therefore in the introduction the focus should be on the concrete experiment and the desired gain of knowledge of the study or the experiment. (Why are the experiment or the studies performed?)

General information on the topic is mostly already in the textbooks. This doesn't have to be repeated. Literature results may be shared only as far as necessary

- a) to make the reader understand the concrete problem the thesis is focusing on.
- b) to explain why there are new findings to be expected in the experiment or study.
- c) to show in what respect these new findings are relevant.

The introduction leads to a working hypothesis through consideration of already known facts, either from literature or from the authors own preparatory work. Usually it is handy to end the introduction with a brief explanation for the basic procedure on how the hypothesis is considered (specific objective of the experiment or the collection of data).

As far as the paper includes a separate literature section (state of knowledge) **the state of research and the current scientific knowledge** is to be proved under consideration of domestic and foreign literature. In general, the cited references are displayed in own words. However, if there is an original quote used (a literally borrowed text) it must be put in quotes. Once the text has been modified in only one word the quotes are no longer required. In both cases an accurate indication of the source is necessary. Chapter 3 und 4 are dealing with the correct citation method and usage of foreign sources. Authors of scientific work must always strive to revert to **primary sources**. So if a publication refers to another source, further research should be done in the original source (and so on).

In experimental work the phrasing of hypothesis (or possibly the quantification of parameters) is indispensable. **Hypotheses** are the tool to create a logical experimental setup and procedure. They are the basis for experimental testing of assumptions that are made on the basis of the current state of research. Experiments have the objective to confirm or reject the hypotheses. Instead of hypotheses that are confirmed or rejected, the **quantification of parameters** (for example for modeling) may be used as a target of experiments. It is the purpose of the introduction to reveal to the reader why and wherefore the examination of the concrete hypothesis or the quantification of parameters is relevant. The experimental setup and the statistical analysis must be chosen so that the hypothesis can be tested sufficiently or the quantification of the parameters can be made precised. Experiments may be performed as laboratory or field experiments, studies also in form of surveys and collection of data. Additionally combinations of experiments and studies are possible.

As part of the presentation of **the study area, material and methods** the pursued paths for solving the problem are to be approached. The subject of the description of the materials is for example the selection of locations for fieldworks or the target group in surveys. Likewise, sampling must be described accurately. The chosen methodological approach is to be shown clearly and the selected terms are to be stated, including quantities and units. In experimental work, the selected experimental setup is described as well as the criteria that led to the selection of the setup. In statistical analyzes the used mathematical model must be shown. It is not enough to name the software package which has been used for calculation. By the way, statistical programs do also have an author and therefore have to be quoted and listed in the literature.

For formulas, calculation methods, technologies, etc. from relevant literature a list of sources is sufficient. Less common or new methods must be stated in a tight and understandable way. Calculations are to be performed in a comprehensible way to ensure a review.

The **experimental results** provide the answer to the previously defined problem based on the measured values and analysis. In experimental work two variants of classification are common. Either results and discussions are carried out in two different chapters, or both aspects are dealt with in one or more joined sections. Usually the first variant is easier to phrase. Therefore it is recommended for inexperienced authors. The second variant waives the repetition of the result (although in short form) in the discussion. For this reason the second variant may be considered when a certain page limit has to be maintained.

If the results are presented separately from the discussion in detached chapters, the results of the tests / study are documented without interpreting them. This means, the results section must only contain a description of the measured and observed values. The result section only provides facts, no interpretation.

Display formats for the results are graphics and / or tables as well as possibly pictures (black and white or – if necessary – in color) in good picture quality with corresponding explanation. Also graphics and pictures are referred to as figures and are numbered accordingly. The tables and figures are evidence for the results mentioned in the text. Therefore tables and figures must be always indicated at the particular place in the text. In other words, for **each** table or figure shown must be an indication in the text. It is sufficient here to append the relevant table or figure in brackets in the text according to the description of the result.

Redundant presentation of results must be avoided (for example in form of a table as well as in form of a figure).

After the result section, the **discussion section** follows. This part represents the focus of the paper. The discussion is intended to interpret the results of experiments and studies. The meaning of the results have to be stated (in reference to the problem illustrated in the introduction). To do so, it may be advisable to refer to statements and results from literature. However, it is not the primary purpose of the discussion to only compare the own results with other results from literature. The discussion is rather about **interpreting** the own results regarding the problem developed in the introduction.

In the discussion the own results may be critically examined as well as possibly still outstanding issues may be revealed. Additionally, a problem-solving approach may be proposed.

If results and discussion are presented in one or more common chapters, the same rules apply corresponding as those explained above for separate chapters. Also in this case, the result (or a group of related results) should be documented first, afterwards they may be interpreted. In this procedure it may be useful to formulate a chapter „overall discussion“ at the end of the paper.

The discussion may end with **conclusions**. However, the conclusions may also be formulated in a separate chapter. In any case they prepare the relation to the problem at the end. Do not give in to the temptation to use the conclusions as a summary of your work. In the conclusions you rather consider the results of the interpretation of your experiments or studies. Therefore the conclusion is focused on the question: What are the consequences?

The **summary** is intended to reflect the key messages from all sections of the work. Since hurried readers will always read the summary first, it must include all the essential statements of the problem, from experimental set-up through to the results and may contain the prospects. By no means the summary should contain something (in the purpose of its name) that was not already in the text before, such as new conclusions or prospects. The summary should be short and concise and usually not exceed a length of two pages.

## Expression

The work must be written in passive voice. Writing in the first person is not allowed, a passive description of the accomplishments is essential for scientific writing.

**Example:** „On the basis of the results obtained it can be seen that the COD concentration per time unit increases" instead of „We found out, that the COD concentration increases per time unit".

General and vague statements such as „the water content is high" must be avoided. Values and statements are always to describe on the basis of comparisons, such as „the water content is high compared to waste water from similar towns and literature values " or „the water content is 60% and therefore significantly higher compared to other samples".

Assumptions may be appropriate in exceptional cases; however, the assumption must be scientifically justified. For example, if an important measurement fails during an experiment, which due to temporal, technical or financial reasons cannot be repeated, a reasonable assumption (based on literature or experience values) in consultation with the supervisor is possible. The use of assumptions should be very limited.

**Example:** „The water content could not be clearly determined because of equipment failure during the test. Repetition of the experiment was not possible due to weather conditions. Biological waste in cities with comparable climatic conditions and similar population display an average water content of 60% (Mondal, 2019). For subsequent calculations this value has been used."

**Unsubstantiated** statements and assumptions are not permitted. Guesses and subjective estimations should also be avoided. Subjective epithets such as "very" should not be used:

**Example:** "The water content is high in comparison to Mondal (2019)" instead of "The water content is very high in comparison" or "...extremely high".

If **reasonable** doubts occur during the critical evaluation of the own procedure or results, it is absolutely permissible to discuss those transparently.

**Example:** "The test results show water contents in the range of 20-30%. However, according to Mondal (2012) and Speyer (2008) a similar material usually has a water content of 60%. The validity of the presented results must therefore be evaluated in detail."

## Units

The paper must be structured consistently. If kg is used instead of kilograms, it is mandatory to adopt this for all texts, tables and figures. Likewise, the same units are to be used (e.g. switching between Dollar, Euro and Indian Rupee is not permitted). Moreover, unit and associated numbers should always be separated by a non-breaking space.

Generally **SI units** are to be used within the paper.

## Figures, tables and maps

For figures and tables only use "Figure (Fig.)" and "Table (Tab.)"; latter term also applies to overviews. Each figure obtains a **heading below the figure** and each table a **heading above the table**, each left

aligned. The formulation of the signature or heading must clearly indicate the topic of the figure / table (without reading the text).

References must be indicated with the figure or table (for example behind the headings or underneath the figure or table) and an explanatory legend if several parameters are shown. If the table contains data from different origins, the data has to be footnoted and the particular sources must be indicated underneath the table. A source "own calculations" is **not allowed**. Are the calculations based on foreign data, the origin must be documented. If the data is from own test results, it may be indicated by using a note in the figure or table. In this case no reference is required.

Each table and figure is **numbered** uniquely (e.g. continuously, referring to chapter numbers). Each table and each figure must be addressed in an appropriate place in the text by mentioning the number. Permissible, for example: "Figure 25 illustrates that ...". Not acceptable, however, are references as "next" or "last" table.

Tip: Draw detailed drafts on a larger scale and reduce them later on the format of your paper.

In order to reduce the effort throughout later copies, **black and white images** should be used when possible. Colored images should be used only if the content of the photographic material would be insufficiently recognizable in a black and white picture. **Photographs** are only allowed when using them to support a thematic statement.

**Tables** may receive a frame. The specific units must be shown above each column for tables with numerical data.

For **graphics**, the axis label occurs with full name and the particular unit. When using gridlines it is important not to cover any information.

If measurement results are displayed in tables and graphs, not only the average values, but **statistical parameters** are to be represented, to show the precision of the measurement or the significance of averaging differences.

**Maps** must be clearly and vividly arranged. Besides the graphical representation the map must include title, complete key (with different signatures and colors), scale and north arrow, author, used map sources, creation date and possibly card number all included in a boxed writing area on the right edge of the map. This title block must be easily legible and is created by means of suitable software on a computer. Cards with a larger format must be folded in A4 (format) so that the scope of the work is not exceeded. Cards can be added in the text or in the annex, whereby it is to make sure that they can be unfolded without any problems. Very large-scale maps are folded and stored in a drawing pocket, which is attached to the inside of the binding cover at the end of the paper. The card design and the folding of the card are carried out so that the title block is always at the front and without unfolding the map completely legible.

In general the guidelines for the design and folding of cards also apply for **technical drawings**. Existing standard specifications are mandatory.

### Footnotes

In footnotes **sources** and **objective marginal** notes of the author may be included. The footnotes are to delineate from the text by a short line and must be numbered clearly. Footnotes are written single-spaced in an appropriate smaller font.

### 2.2.8 Bibliography

The heading "Bibliography" is written in the same manner as the title "Table of contents". All sources used (also newspaper articles, which are included in the annex) must be registered on the bibliography as a **full document** (see chap. 4). The reference list must in turn **only** contain sources which are used and cited in the paper.

The reader which is interested in the literature has to be able to **identify every source easily** based on the information given in the bibliography to view them in a library, buy in a bookstore or purchase the source otherwise. Therefore, first of all the author must be named. If the author is unknown, the source is listed under "anonymous". In principle the author is **not** called with academic degree or titles (but with nobility titles), but only by his last name and the first initial of his given name(s).

- The bibliography must be listed alphabetically by author.
- The titles must match in the bibliography.

The pages are numbered in **Arabic numerals** continuing the pagination of the text.

### 2.2.9 Annex

All **materials** that are listed and used in the text but are not, or only in exceptional cases verifiable by third parties (e.g. unpublished manuscripts, internal documents, records, memos, court records, own documents such as questionnaires, empirical material, methodological notes, statistical materials, individual measurement data that is often worked with) must be presented in the annex. The appendix also includes brochures and leaflets as well as copies of product brochures. For very extensive annexes a separate volume for materials may be arranged.

The annex headings are continuously provided with Roman numerals. However, the page numbering is to be resumed up to the last page (Arabic numerals).

The annex is preceded by its own directory in which the material used by its number (Roman numerals) and the particular title is listed.

Example:

#### LIST OF APPENDICES

Page

**Annex I** Brochure of the co. XYZ for consumers: 75

"Bewusst BIO-logisch spülen", Nürnberg 2006

**Annex II** Interview with Mr. Maus, human resource manager, co. Dingsda, 80

Munich, 20.11.2007, 10:00 – 11:00 Uhr

### 3 Citation rules

This section of the guide provides an overview of the correct citation in scientific papers. The possible forms of the source citation are dealt with in chapter 4.

#### 3.1 General

The use of foreign intellectual property is to be **clearly indicated** by the exact source in the text as well as in the bibliography. Only sources can be listed in the bibliography that have been used in the text and conversely. The literature used must always be understandable to a reader. Hence, direct quotations shall include the respective page number of the quote.

Every quotation must be examined to see if it does not have – out of context – another sense than the information supplied by the authors mind. Information that is not literature, but for example found out in a **personal interview**, has to be provided with a reference to the source.

#### 3.2 Literal (direct) quotes

Literal quotations should be started and finished by quotes. They require **literal accuracy** (e.g. punctuation, accentuation, etc. are to take over exactly). Deviations from the original, for example **own highlighting and additions** are to be provided with brackets and a note in the footnote ("editor's note" or "highlighting by the author"). Omissions are indicated by continuous points in brackets in the text [...] or (...).

**Example:** "An extension of the market volume (...) can be archived by the development of new user groups." 3 or (3) or (Bruhn 1995, p. 80)

This also applies to phrases containing the same wording as the source, but was converted in the structure of the sentence.

**So: Any modification of the direct source must be marked.**

A direct quotation should not include more than two or three sentences. Also two direct quotations should not follow directly behind one another if possible. Generally, a paper should contain only little direct quotations. Quotations within a quotation are provided with an apostrophe at the beginning and end.

#### 3.3 Analogous (indirect) quotes

An analogous quote is present at the takeover of the thoughts of others or when borrowing from another author. Therefore this is not about the literal transcription of a text. Quotation marks do not apply because the foreign idea is reproduced in own words. The advantage of this citation is referred to reading fluency, the paper can be continuously written in one (the authors) style.

It may be necessary to integrate an introductory phrase before the analogy.



### 3.4 Primary and secondary notes

Usually the original text must be quoted; only in exceptional cases where the original work is not available a source in the secondary literature may be cited. In this case both the primary and the secondary literature must be specified as a source.

The unavailable literature source is cited first, followed by the suffix "quoted by ..." and the complete secondary source.

Example: Potthoff and Trescher 1986 cited in Pappmehl 1990

### 3.5 Tables and figures

For tables and illustrations in the text, the source of the information starts with „Source: ...“. The source is written either directly behind the heading or at another suitable location in or under the table or figure.

## 4 Sources and references

This chapter explains how the sources used in both the text and the bibliography is presented. There are several possible solutions. Whichever format is selected, it is important to apply it consistently throughout the paper.

### 4.1 Definition

„Sources“ are all materials used for a study, e.g. in addition to the literature also unpublished texts, lectures and lecture notes, mimeographed and archived materials, documentations, brochures, pamphlets, letters, spoken messages, movies, records, radio and television broadcasts, web pages, etc. The sources used in the paper must be listed not only completely with all necessary bibliographic information in the reference list, but also must be supported by a short citation every time they occur in the text. This also applies if sources are cited not literally, but analogously. Omission of a citation may raise suspicion of plagiarism (see chap. 4.5).

Various labeling options is found in the literature. The two most common types are presented in this guideline.

### 4.2 Complete references

Whenever the source is indicated to the currently used quote in a footnote, a so called complete reference must be applied.

For all further information from the same source it is sufficient to mention the authors' name, the addition loc. cit. (loco citato – which refers to the page the author has been cited the first time) and the page number.

Example: cf. Meier, G.: loc. cit., p. 234 – 236

All sources must be handled consistently.

### 4.3 Short source reference

The source reference does not indicate the complete source, but contains only the information (in a footnote) that is necessary to refer to the full source in the bibliography.

By mentioning the author (without first name) and the year of publication of the book or article, the reader can get the source from the bibliography.

Example: Müller (2006) or Müller 2006

If several contributions of one author are cited that were published during the same year, a further distinguishing feature must be brought in to determine the exact source.

Example: Mayer (2006a) or Mayer 2006a

Publications of the author are to be marked appropriately in the bibliography.

Examples: Müller, A. 2006: Investment and Finance, Berlin

Mayer, A. 2006a: Animal biology, Hamburg

If a publication was released by **two authors**, both names must be mentioned (e.g. Müller and Mayer 2006 or Müller & Mayer 2006). If the source was written by **more than two authors**, indicate the source like this: Müller et al. 2006. Only the first-named author is to be mentioned. However, in the bibliography all co-authors must be listed.

#### Examples:

Normal: Mondal (2016) or (Mondal, 2016)

A quote from several sources: (Mondal, 2016; Cuff, 2015)

Two authors: (Mondal and Cuff, 2014)

If there are more than two  
authors to the source: (Mondal et al., 2016)

*Name of the first author + et al.*

Several publications of one  
author in a given year: (Mondal, 2016a)

(Mondal, 2016b)

*Depending on which is called first*

For books the publisher is named as an author if the author of the chapter used is not obvious.

In company brochures or manuals usually no author is indicated. If so, the company may be mentioned as an author.

## **4.4 Complete sources of various literary categories**

In the following the citation in complete source references in different literary categories with their individual components and their **sequence** is described. Generally the sequential order is: author, title, publication medium.

### **4.4.1 Books**

1. Surname and first name of the author (the first name may be abbreviated). For books written by multiple authors all names must be listed. If no author is detectable, the source is called XXX "authorless" (without author). Academic titles are not adopted.

If necessary, the editor (ed.) may be named at this point.

2. Year of publication (if this cannot be ascertained, note XXX = without year)

3. The main title and subtitle of the paper.

4. The term "vol." for volume and number of the volume in Arabic numerals.

5. The edition number, unless it is a first edition. The edition number is also written in Arabic numerals and followed by the abbreviation "ed.".

6. Publisher and place of publication (in case of several places at least two). In a practical work books are to be cited with publisher, journals without. If the place of publication is not identifiable, note XXX = without place of publication.

**Examples:** Loeffler, L., 2002: Anatomy and Physiology of Domestic Animals. 10Th ed., publisher Eugen Ulmer, Stuttgart

Zogg, M., 1993: Introduction to mechanical engineering. Publisher Teubner, Stuttgart

#### 4.4.2 Journals and article collections

1. Surname and first name of the author(s) of the article
2. Year of publication
3. Title of the essay
4. in: name of the journal or collection of articles (if collection: publisher and place of publication)
5. Publications in foreign journals
6. Number of the year (in bold)
7. Possibly volume or number of the issue (not necessary if pagination is sorted by year)
8. First and last page of the article

**Example:** Swalve, H.H., König, S., 2007: Test herds in breeding programs for dairy cattle. 1. Communication: General Considerations. Science of breeding 79 (4), 249-262

#### 4.4.3 Newspapers

1. Surname and first name of the author of the articles
2. Year of publication
3. Title of the article
4. In: name of the newspaper (written out)
5. Place of publication (if not already apparent from the name of the newspaper)
6. Number of newspaper
7. Date (including the word „from“ followed by day, month, year in Arabic numeral)

**Example:** o.V., 1993: Britisches Pfund knickt erneut ein. In: Schwäbische Post, Aalen, Nr. 26 vom 02.02.1993

#### 4.4.4 Dissertations

1. Surname and first name of the author
2. Year of graduation
3. Main title of the dissertation

4. Abbreviation „Diss.“

5. Place of graduation (3. and 4. In parentheses, if the dissertation is published in print)

6. if the dissertation was published: publication, possibly deviant year and name of the series and volume

**Example:** Wörner, E., 1987: Termingeschäfte als Instrumente des Zinsrisikomanagements (Diss., Nürnberg), Europäische Hochschulschriften, Bd. 864, Frankfurt 1988

#### 4.4.5 Comments and loose-leaf collections

1. Surname and first name of the author

2. Year of publication

3. Main title of the comment

4. If necessary, add „comment“ if not already included in the main title

5. The volume and number (vol. + number)

6. The edition number (ed. + number)

7. Possibly the name of a later editor who is not founder or author of the first edition

8. Place of publication

9. If applicable, add "loose-leaf collection" with date and or latest delivery number

**Examples:** Grimm, B.-Chr., Weber, D., 1990: Steuertipps für Beamte und öffentliche Bedienstete. Handbuch der Steuerersparnis des Beamten und öffentlich Bediensteten. Bd. I: Teil 1-7, Loseblattsammlung, Mannheim

Dersch, H., Neumann, D., 1990: Bundesurlaubsgesetz nebst allen anderen Urlaubsbestimmungen des Bundes und der Länder. Beck'sche Kommentare zum Arbeitsrecht, Band 12, 7. Aufl., München

#### 4.4.6 Commemorative publication

1. Surname and first name of the author of the cited article

2. Year of publication

3. Title of the article

4. The words "commemorative publication for"

5. Surname and first name of the person the writing is dedicated to

6. Possibly a note about the editor

7. Place of publication

**Example:** Dörr, K., 1983: Fachhochschulen (LUH) - ihre heutige Gestalt unter besonderer Berücksichtigung der betriebswirtschaftlichen Fachbereiche - ihr Beitrag zur Studien- und Hochschulreform - ihre Probleme in den 80er Jahren. Festschrift für Otto Preitz, Bad Homburg v.d.H.

#### 4.4.7 Manuals and pocket dictionaries

1. Surname and first name of the author of the cited article
2. Year of publication
3. Title of the article
4. In: written-out title of the pocket dictionary
5. If necessary, volume and number in Arabic numerals
6. Note about the editor
7. Place of publication

**Example:** Remer, A., 1992: Personalcontrolling. In: Gaugler, E., Weber, W. (Hrsg.): Handwörterbuch des Personalwesens. 2. Aufl., Enzyklopädie der Betriebswirtschaftslehre, Bd. 5, Stuttgart

#### 4.4.8 Standards and laws

Standards and laws are cited in the following way:

**Example:** Deutsches Institut für Normung: Barrierefreies Bauen (1998). Berlin: Beuth (Deutsche Norm, DIN 18024, 1).

Richtlinie 2004/35/EG des Europäischen Parlaments und des Rates vom 21. April 2004 über Umwelthaftung zur Vermeidung und Sanierung von Umweltschäden, ABl. EU Nr. L 143, S. 56.

Gesetz über Naturschutz und Landschaftspflege (Bundesnaturschutzgesetz - BNatSchG) vom 29. Juli 2009 (BGBl. I S. 2542).

#### 4.4.9 Other publication / "grey literature"

In particular non-scientific presentations, reports from public events or the mass media may be considered. Furthermore videotapes, CD-ROMs and audio cassettes are covered in this section as well as other finals or term papers. Also the present guideline is such literature. It is to be assumed that these sources might be difficult for the corrector to be made available. Therefore they should be attached to the work. Data to be stated on this:

1. Surname and first name (of the speaker, the director, etc.)
2. Year of publication
3. Title of the paper or the broadcast
4. Presentation or broadcast date
5. Possibly place of the presentation
6. Possibly station or television channel
7. Possibly type of script
8. Note: "unpublished"

**Examples:** Schreiber, M., 1986: Sparverhalten in der EG, Vortrag vom 01.05.1986, Frankfurt, Marketing-Club (maschinenschriftlich), unveröffentlicht

Schreyögg, G., 1989: Unternehmenskultur, Videokassette (VHS) 92 Min., Teil 1: Das Konzept, Wiesbaden, unveröffentlicht

#### 4.4.10 Private conversations / calls / emails/ letters

Citing personal conversations, calls, emails or letters in a scientific paper is to be limited to an unavoidable minimum. Especially a personal, not reasonable opinion of third-parties about the topic is no quotable source for a scientific paper.

When dealing with oral, personal information as references there are basically two ways of documentation:

- The history log
- The results log

If more than 50% of the work is based on a personal conversation with experts, the history log of the conversation should be included in the annex. Otherwise a results log included in the annex is sufficient. None of this is needed when sentences from the conversations only are cited. Nevertheless the conversation must be quoted in the footnote.

In principle the supervising professor should be asked, which way of documentation he or she prefers.

1. Surname and first name of the interviewee or sender
2. Year
3. Position in the company
4. Company name
5. Company domicile and date of the interview

**Examples:** Mayer, A., 2007: Produktmanagerin bei Werner & Mertz GmbH, Mainz, mdl. Mitteilung vom 13.02.2007

Mayer, A., 2007: Produktmanagerin bei Werner & Mertz GmbH, Mainz, Mitteilung per E-Mail / per Brief vom 13.02.2007

However, the name of the company and interviewee may only be mentioned if there is an explicit consent.

#### 4.4.11 Internet

In general for citations from websites the same principles apply as for personal conversations. They are to be refrained when dealing with personal experiences and opinions that are not verified.

The following citation has become generally accepted:

1. Surname and first name of the author (if available, otherwise anonymous)
2. Year of publication (if available)

3. Title of the website

4. Address including all subdirectories

5. Date of the printout (since most websites are updated regularly)

**Example:** TransGen (Hrsg.), 2007: Futtermittel. „Mit Gentechnik“ ist der Regelfall. Verfügbar unter: <http://www.transgen.de/lebensmittel/einkauf/17.doku.html>. Abgerufen am 22.08.2015.

#### **4.5 Plagiarism**

The own scientific research of the author must always be in the center of any scientific paper. Findings that do not arise from his own work are to be marked clearly with the appropriate citation. This also applies to figures, tables and formulas. Failing to indicate the reference is plagiarism and therefore a serious violation of the principles of scientific writing. In this case, the paper does not fulfill the requirements of a scientific thesis and will be rated without exception with 5.0 (failed).

To check all the papers and theses in terms of plagiarism, the work must be provided both as a printout and electronically on disk (PDF or MS-Word format). Special rules concerning the form of delivery apply to protected papers.



## 5 Further Literature

Bänsch, A., 2003: Wissenschaftliches Arbeiten. Seminar- und Diplomarbeiten. 8. Aufl., München/Wien/Oldenburg

Karmasin, M., Ribing, R., 2007: Die Gestaltung wissenschaftlicher Arbeiten. 2. Aufl., Wien

Poenicke, K., 1987: Die schriftliche Arbeit. Materialsammlung und Manuskriptgestaltung für Fach-, Seminar- und Abschlussarbeiten an Schule und Universität. Mit vielen Beispielen, Mannheim, Wien und Zürich

Rossig, W.E., Prätisch, J., 2006: Wissenschaftliche Arbeiten. 6. Aufl., Weyhe

Theisen, M.R., 2006: Wissenschaftliches Arbeiten. Technik – Methodik – Form. 13. Aufl., München

Thomas, U., 1987: Empfehlungen zur formalen Gestaltung von Abschlussarbeiten. In: WiSt, Heft 7, 367 - 372