

# Ludwigshafen University of Applied Sciences

## Guidelines for scientific papers

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### 1 Formatting

These guidelines are intended to assist students to become familiar with how to construct their scientific papers. Therefore, the most important requirements for the subject area have been noted. As well as studying these guidelines, you are advised to consult the comprehensive body of literature on the topic. By way of example, the following well-established works are recommended:

Stary, Joachim; Franck, Norbert: Die Technik wissenschaftlichen Arbeitens. Eine praktische Anleitung. 15th revised edition Paderborn inter alia: Schöningh 2009  
Theisen, Manuel René: Wissenschaftliches Arbeiten: Technik-Methodik-Form, 14th edition, Munich: Vahlen-Verlag 2008

Macgilchrist, Felicitas: Academic writing, 1st edition, Paderborn: Schöningh 2014

It would be a good idea to go to the library and take out books by renowned scientists as examples. Please make sure that you borrow monographs (in other words, the investigation of individual scientific issues) and not textbooks. As a rule it is sufficient that dissertations have a high standard in terms of formality of language and content. (Books can be identified as doctoral theses, if they bear a notice in small print on the page with the ISBN number such as "Thesis of Berlin Technical University Dissertation 2010".)

There follow the formatting rules for scientific investigation papers in the subject area:

#### Font type and size

- in running text	Times New Roman	→12 p
	Arial	→10 p
- in footnotes	Times New Roman	→10 p
	Arial	→ 9 p

#### Line spacing

- in running text	1.5 line spacing
- in footnotes	single line spacing
- in justified text with hyphenation	

#### Width of margin

- upper: 3.0 cm
- lower: 3.0 cm
- right: 3.0 cm
- left: 3.0 cm

### **Page numbers and page numbering (pagination)**

- The page number is printed in the header.
- In lists large Roman numerals are used, beginning with "I" on the first page of the list of contents.
- In running text Arabic numerals are used, beginning with "1" of the first text page.
- In the bibliography and the appendices the Arabic numeral pagination of the text section continues

### **Headings and paragraphs**

- Headings must be left-justified.
- There must be paragraphs between individual sections - without indentations

## **2 Structure of the work**

In this section the components of a scientific paper are listed in the established obligatory sequence and explained:

### **Title page**

A specimen title page is shown on the following page.

### **Preface (optional)**

In the preface the student may elucidate the motivation, significance or particular difficulties. The preface is often used for acknowledgements. A preface ends with details of the place and date and the forename and surname of the author. In Bachelor's, Master's or Diploma dissertations a preface is not expected and therefore should be omitted, unless there really is something to say.

This is also where blocking notes can be inserted. This is necessary in practical papers, if the paper contains the confidential data of a company.

### **List of contents**

The list of contents reflects the structure of the paper. All the headings must be identical in the list of contents and in the paper. The minimum length of the section containing the list of contents is one text page. This avoids over-segmentation, and the result is that theses usually have three levels of classification.

If a sub-section is inserted below a section, at least one further sub-section must logically follow (in other words: it makes no sense if 1.1 is not followed by 1.2).

The list of contents is produced in *Word* using the menu point Insert/References. Index and Lists/Contents lists. The headings must be already be formatted according to their levels.

**Ludwigshafen University of Applied Sciences  
Department**

**<Degree course>  
<Diploma thesis> / <Doctoral thesis> / <Seminar paper>**

Topic:

Supervisor at the university:

Prof. Dr. <.....>

Supervisor in the company:

<.....>

Author:

<Name>

<Street>

>Post Code City>

Matriculation number: <Number>

submitted on: <Date>

## List of Figures / List of Tables

All figures and tables in the text must be numbered and listed in the List of Figures and Tables. Where the paper contains a large number of figures and tables, then there must be a separate list for each. It adds to the clarity of relatively long papers, if the figures and tables are numbered according to section (i.e. 3.1, 3.2, 3.3 etc.).

Illustrations, which are not self-evidently clear, must have a legend.

Each individual illustration must have a caption, either above it or beneath it.

Indications of source are introduced by the word, "Source" and are placed beneath the illustration.

Example:

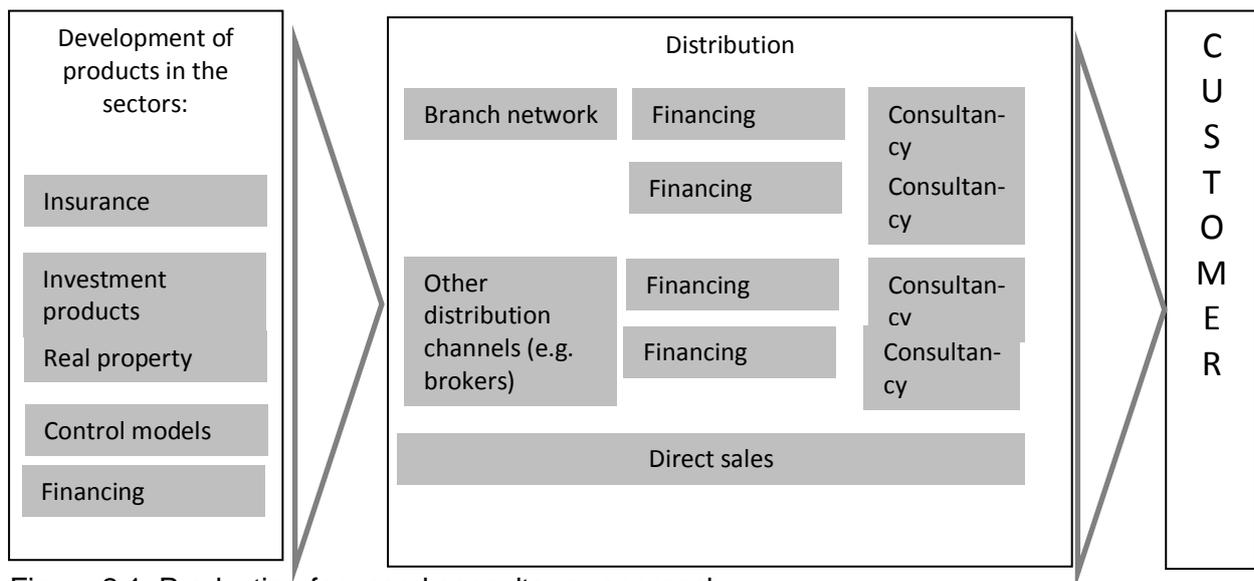


Figure 2.1: Production-focussed consultancy approach

Source: Kruschev, Wesselin: Private Finanzplanung: Die neue Dienstleistung für anspruchsvolle Anleger, Wiesbaden 1999, p. 12

## List of abbreviations

Fig.	Figure
PLC	Public limited company
AWD	Allgemeiner Wirtschaftsdienst ( <i>German financial services company</i> )
BGB	German Civil Code
CFM	Commerz Finanz-Management GmbH
CFP	Certified Financial Planner
DEVFP	Deutscher Verband Financial Planners e.V. ( <i>German Association of Financial Planners</i> )
DVAG	Deutsche Vermögensberatung AG
etc.	et cetera

## **Text**

Students are forever requesting advice as to the length of scientific papers. Here we cite § 3 paragraph 1 sentence 3 of the Examination Regulations: "The examination for the degree of Bachelor is intended to determine whether the candidates have a connected overview of their disciplines, whether they have acquired the necessary fundamental professional knowledge and on the basis of scientific insights and methods are capable of working independently in their professional field."

This is the purpose of the paper, not achieving a specified (as high as possible) number of pages. For rough guidance we list here the following numbers of pages:

- Work placement report 10 – 15 pages
- Seminar paper 15 – 20 pages
- Bachelor's dissertation: 40 – 60 pages
- Master's thesis: 60 – 80 pages

These details refer to text pages (including figures and tables) without any appendices.

These details need to be further explored: On one hand in other disciplines and departments it is recommended that papers are not too voluminous; on the other a trend towards more voluminous papers can be observed. A more extensive paper obtains a better grade, however, only if the paper is really thorough and rich in relevant content. The reproduction without reflection of passages from the literature makes the paper thicker, but not better.

## **Bibliography**

Requirements on listing and citing sources are summarised in a separate section in these guidelines.

## **Appendix**

Appendices can take many forms:

- multiple pages of tables ("data graveyards")
- questionnaires used in the investigation
- internal corporate documents of significance for the work placement project
- and so on

Reference to the appendix or the appendices must be made in the text. Where there are several appendices they should be identified by large Roman numerals. The Arabic pagination of the text section and the bibliography continues. The appendices must be organised into the order of sequence, in which they appear in the text.

Figures and tables, which take up fewer than one or two pages, are integrated into the text and do not form a separate appendix.

A CD containing the text of the paper must be attached to each paper (in contrast to the appendix, this CD is not bound into the thesis). This allows the work to be checked with "plagiarism finder" software. The CD must be put into a suitable paper pocket or CD cover and glued to the inside of the back of the work.

Substantial numbers of appendices and annexes, which therefore do not need to be included as a paper appendix in the bound version of the work, can be stored on this CD.

However, a list of files on the CD must be included as a paper appendix. In case of doubt it is the supervisor of the paper, who decides which appendices ought to be included in printed form and which can be included in digital form.

### **Sworn declaration**

The following text is included in every paper and must be signed in the author's handwriting in every copy submitted:

I affirm in lieu of oath that the Bachelor's dissertation/Master's thesis/ Diploma thesis submitted was in all parts exclusively prepared as my independent work, and that sources or resources other than those explicitly referred to, have not been used and that direct quotations or references to the content of other works have been acknowledged as such.

I am aware that a false declaration will incur legal consequences.

Ludwigshafen, dated \_\_ . \_\_ . 2015

\_\_\_\_\_

Signature

Two bound copies of the thesis (Bachelor's dissertation, Master's or Diploma thesis) must be submitted by the stated deadline to the Student Services Centre/Examination Board.

### **3 Sources and citations**

All sources and resources must be disclosed in accordance with the affirmation in lieu of oath. At the same time any requirements and ideas from supervisors in the company, in which work placement projects were undertaken should be made clear in the form of reference citations. The supervising professor must be able to form a detailed impression of the student's own performance. It can also be useful to make obvious your own specific achievements, e.g. by providing the source in the form of a table:

"Author's statistical analysis of sales figures".

A distinction must be made between verbatim quotations and paraphrased quotations. Verbatim quotations are identified as follows:

- Verbatim (direct) quotation consists in reproducing one or more words or sentences literally and with identical spelling and should only be used where the exact formulation of the authors is decisive.
- Verbatim quotations begin and end with quotation marks.
- The omission of a word is indicated by two dots, the omission of more than one word by three dots.
- Explanatory words are placed in parentheses.
- Quotations within a quotation are identified by single quotation marks.
- In the footnote the verbatim quotation is identified by its beginning with the author's name.
- When citing in full, source information and the author's marginal notes are given as footnotes at the bottom of the page.
- Footnotes always begin with capital letters and end with a punctuation mark.

For paraphrased quotations the following applies:

- Paraphrased (indirect) quotations reproduce the sense of opinions stated.
- Paraphrased quotations are not identified by quotation marks.
- The formulations must be retained, so that it is obvious for each part of the statement whose opinion is being expressed.
- In footnotes the analogous quotation is identified by 'compare' (cf.).
- As a matter of principle all literature, which has been used, must be acknowledged by name and author(s).
- Conversely no literature must be listed in the bibliography, which was not used in the paper.

In the text the sources are either referred to in footnotes or in short citations in the running text. This "Harvard citation system" is also permissible in footnotes. A system of quotation uniform and consistent throughout the paper is self-evident.

The exact details of the source must be given in the bibliography. The following examples rely on the regulations in accordance with DIN 1505.

The following categories shall now be dealt with:

- books (monographs)
- articles in journals
- newspaper articles
- articles in collected editions
- Internet documents

For **books** (monographs), brochures and similar materials the literature details are given as follows:

- author's surname
- authors' forename
- title
- sub-title
- edition,
- place of publication:
- publisher ( not strictly necessary)
- year
- (= series title, volume or issue number)

Example:

Krummacher, Michael; Waltz, Veronika: Einwanderer in der Kommune. Analysen, Aufgaben und Modelle für eine multikulturelle Stadtpolitik. 1st ed., Essen: plain text 1996.

If there are two or three authors or editors (ed.) these are listed:

- surname of the 1st author, forename of the 1st author;
- surname of the 2nd author, forename of the 2nd author;
- surname of the 3rd author, forename of the 3rd author;
- title ...

For books with more than three authors only the first author is named, followed by "et al.".

Names of institutes (library: corporate bodies) are treated in principle like author's names:

- name of the corporate body:
- title ...

Example

Social welfare work of the EKD: Miteinander leben. Rahmenkonzeption für die Arbeit der Diakonie mit Migrantinnen und Migranten. Stuttgart: Social welfare work of the EKD 1997 (= social welfare correspondence).

The literature details for an **article from a journal** include the following details:

- author's surname
- authors' forename
- title of the article
- title of the journal
- place of publication
- volume number or year
- (date of publication)
- issue number
- first to last pages of the article

Examples:

Richter, Ingo: Was kann und muss die Fortbildung in multikulturellen Gesellschaften leisten? Jugendwohl, Freiburg, 76. year, (1995) issue 11, pp. 489-498.

Smolicz, J.J.: Australia. From Migrant Country to Multicultural Nation. International Migration Review, New York, Vol.XXXI, (1997) No.1, P.171-186.

**Newspaper articles** are cited thus:

- author's surname
- authors' forename
- title of the article
- title of the newspaper
- (place of publication, unless this appears in the title)
- issue
- number of the newspaper
- "dated"
- date
- page numbers

Examples:

Erlmann, Veit: Arabesk aus Frankfurt. Die Tageszeitung (Berlin) dated 27.05.1997. p. 14-15

Weidenfeld, Wolfgang: Die Weltgesellschaft entsteht nicht nach dem europäischen Modell. Frankfurter Rundschau. German issue No.302 dated 29.12.1995 p.10

For **articles from collected editions** is somewhat more complicated:

- author's surname
- authors' forename
- title of the article
- "in"
- title of the collected edition
- "ed."
- forename of the editor (abbreviated)
- surname of the editor
- edition
- place of publication
- publisher ( not totally necessary)
- year of publication
- first to last pages of the article
- (= series title, volume or issue number)

Example

Shell, Kurt L.: Multikulturalismus und die Verfassung. [in: Multikulturelle Gesellschaft ed.: B. Ostendorf. Munich Fink 1994. pp 95-109

For **Internet documents** the following details are given:

- surname of the author
- forename of the author
- (year of publication)
- title of the document ( taken from the <title > tag in the source code)
- (type of document e.g. www page or text file etc., status: date of latest amendment or date of version for download)
- Internet: complete URL
- (access: date, time)

Example:

University of Zurich, Department of Geography (ed.) (1997). Leitfaden wiss. Arbeiten  
www-site, Status: 15.07.1997). Internet: [http://www.geo.unizh.ch/gis/leitf/leitf\\_home.html](http://www.geo.unizh.ch/gis/leitf/leitf_home.html) (access: 24.08.1999, 23.11 CET).

Quoting from Internet publications must be viewed critically: the source for current information in the scientific field is newspapers. If it is nonetheless appropriate to quote from the Internet, the pages may be stored on the attached CD. This allows the supervisor access to the frequently short-lived data while he or she is marking the paper and he or she can assure him/her self of the accuracy.

#### **4 Quality criteria for scientific papers**

In this section we list important evaluation criteria for scientific examination papers. In the lecture on Scientific Methodology the issues broached are handled in depth and many more instructions for the production of such papers are given. At the lecture there will be the opportunity for asking questions and discussion.

##### **Classification and systematics**

- Is the classification logically consistent / immediately comprehensible / convincing as regards the substance?
- Is the scope of individual sections and the paper as a whole reasonable?

##### **Quality of the findings and results**

- Are the terms clearly defined?
- Are the relevant aspects of the topic discussed?
- Are the lists consistent with the classification system?
- Are the issues formulated / represented with precision?
- Does the author offer approaches to solving problems?
- Has the author made the work his or her own in presenting the issues by giving commentaries and opinions, making comparisons, or has he/she merely produced a "sterile» summary of the issues?

- Are interfaces with related problems identified?

##### **Selection and processing of literature**

- Is the scope reasonable?
- Have the important sources been included?

##### **Formalities**

- citations and quotations
- classification
- page layout
- and so on

## **5 Additional advice for presentations**

The key requirements for lectures are

- Sensible choice of content
- Sensible choice of presentation media
- Accurate, comprehensible transmission of the content
- Good, interesting presentation (examples, variety)
- Keeping to the allotted time
- Responses backed by knowledge to questions on the topic of the lecture

Principle: Imagine that you are preparing the presentation on behalf of a paying customer and are giving the presentation to the customer's employees.

### **Selection of the contents**

As a rule the content of the lecture is largely pre-determined by the preparation of the scientific paper, but by virtue of the time available or additional examples may diverge from it. If not all the content of the preparation for the paper can be comprehensibly included in the lecture, you will have to omit a "considered" part of the content. Justify in one sentence which content you have omitted and why. Make a note of one or two points, which you can additionally omit, without any greater loss of substance, if you should realise during the presentation that you do not have sufficient time.

If the presentation is too short, expand it with additional examples, documents, online demos, references to related areas etc. Always keep one or two sections in reserve in case you deliver your presentation too fast on the day - for instance because you are nervous. With online demos always have a strategy prepared, as to what you can do, if the online demo fails to function for some reason or other.

### **Selection of the presentation media**

Nowadays the structure of a presentation is usually prepared in the form of a PowerPoint presentation. It has, however, been discovered, that presentations, which are based solely on PowerPoint, very quickly weary the audience and are seldom sufficient to attract their attention. Therefore it is sensible to use alternative media, particularly with respect to examples, cf. 9.4.

Examples of alternative media are

- Good old "chalk and talk"(make sure you wipe the board thoroughly before the lecture begins) for working through complex concepts,
- Flip charts as an alternative to the chalk board (make sure one is available and if necessary, bring pens),
- Visual aids,
- Excel tables to demonstrate and simulated calculations,
- Online demos of programs or documents,
- Audio and video techniques (check availability and if necessary bring your own equipment and test it before the lecture)

A good mixture of media can make an enormous difference to the quality of a presentation. Do not be put off by the extra expenditure involved.

### **Accurate, comprehensible transmission of the contents**

It is important that your audience can understand your presentation. It is said, "Take your listeners with you from where they stood at the start of the presentation"! Justify why the content of your presentation is important. Fit this into a context, which is already familiar to your audience.

Make the effort to provide the best possible quality of slides, words and writing. This means, for instance

- Spelling: incorrect spelling and grammar distract the audience unnecessarily
- Clarity: not too much text on your slides
- Graphic illustrations: "A picture says more than a thousand words". Figures must however, be accurate and illustrate only that which they are intended to illustrate, no more and no less.

Present each topic in such a way that the audience learns as much as possible in the time at your disposal. Remember the principle that you are preparing the lecture on behalf of a paying customer and are giving the lecture to the customer's employees.

Remember:

- You are delivering the presentation to your audience, not to your supervisor, because he has already read your preparation.
- The maximum impact on learning is usually not achieved by the highest possible level of contents and the fastest pace.

### **Good, interesting presentation (examples, variety)**

#### **Introduction / classification**

You can only keep your audience's attention over a long period, if your presentation is good and interesting. Organise your topic into areas, with which your audience is already familiar. Work out why the points, which you are presenting, are important.

Prepare your introduction very carefully! Take care that your listeners can follow you in the introduction. Do not let your delivery of the introduction become too rapid. Listeners, who did not understand the introduction will not be able to follow the rest of the lecture. However, do not make the introduction too long, for your audience is expecting substance.

#### **Alternative media**

Use alternative media to guard against your audience becoming tired. For the same reason it can be sensible occasionally to ask the audience questions. Role plays with audience participation can be interesting, if there is sufficient time (which unfortunately is usually not the case).

## **Examples**

Use graphic illustrations, such as images, diagrams, tables etc. Use as much graphic illustration as possible, provided that this serves the purpose of transmitting the content of the presentation comprehensibly. Do not go over the top: illustration should be "in colour, but not multi-colour"! Animations must not distract! Remain serious! Your content is the important thing. If at all reasonably possible, also use modern technologies e.g. audio and video techniques.

Authentic examples from practice are ideal. If you already have links to one or more firms, try to illustrate your topic in collaboration with these firms. Discuss matters with the technical people there and develop your example from there. (First of all, clarify the non-disclosure requirements and comply with them!)

Examples from everyday life are also possible. Examples from the Internet are possible. Other scientific points of contact on your topic can in case of need also serve as examples. Examples can often be presented with excellent results using alternative media e.g. through online demos, or you can sketch the structure of the example on the board or flip chart or show documents from practice.

## **Other**

Do not read your presentation from slides. Write the facts on the slides and explain the individual points using other words and speaking freely. Cater to the interests and prior knowledge of your audience.

One or more trial lectures in front of friends and acquaintances will considerably improve the quality of the "real" presentation.

## **Keeping to the allotted time**

The time allotted for your presentation must not be exceeded and the lecture should not end before schedule. Imagine once more that you are presenting the slides to a paying customer and have specifically agreed the time available.

A trial presentation in front of friends can help you to keep to time. Experience shows that the situation in the "real" presentation is different and sometimes the timing does not work.

Tips:

- Do not speed up, since this is important for the comprehensibility of your presentation,
- Especially in your introduction take care not to speak too quickly from the start and do not increase the pace,
- During the presentation keep your eye on the clock,
- Construct your presentation with (invisible) time checkpoints e.g. "half time" or control your timing by means of the page numbers,
- Prepare places in advance, at which you can shorten the presentation, if time becomes tight. Do not speed up at the cost of comprehensibility.
- Prepare places in advance, at which you can make the presentation last longer, e.g. by additional explanations or additional examples. Keep one or more topics in reserve, in case you proceed too quickly.

## **Questions on the subject of the presentation**

At the end of your presentation you will be expected to respond to questions from the audience and from your supervisor.

Here you must prove that you have understood your topic both as regards its technical content and with respect to its classification. Ideally you have also considered fields of application for your topic and related fields.

During your presentation try not to hide behind standard formulations, phrases or copied sentences. Try to understand as much as possible of the factors and background to your topic. Your supervisor's task is to find out how far your understanding goes.