

**Rheinisch-Westfälische Technische Hochschule Aachen**



# **How to Write a Seminar Paper**

**Seminar: Writing Techniques**

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# 1 Introduction

Since generations, students are writing preseminar papers, seminar papers, and eventually diploma or master theses. For most students, such seminar papers are the first documents they write – apart from some shorter documents in school. On this reason, supervisors of seminars have to give the same comments about writing style, formatting, literature, etc again and again.

This paper should serve as a guideline for students, helping them in writing seminar papers. To do so, chapter 2 starts with some guidelines about the style of the document. This includes as well formatting of seminar papers as comments on orthography and the embedding of figures and tables. Afterwards, chapter 3 has a closer look to the structuring and presentation of contents. This chapter gives an overview of general rules how to structure a paper, which contents to consider, and which parts are necessary to be included. Also, it is stated which formulations should be used and which should not. Comments on how to include literature in the seminar paper follow in chapter 4, together with some remarks on literature study. Chapter 5 is the most important one – it summarizes DOs and DON'Ts for seminarists. At the end, chapter 6 concludes the paper and gives a look onto future trends in seminar papers and presentations.

## 2 Document Format

Not only content, also the presentation of material is important. On this reason, this chapter gives an overview how to format the paper in a way that others feel comfortable in reading.

### 2.1 General Guidelines for Documents

Use DIN A4 paper format, and usual borders like 2,54cm on all sides. Text should be in Times New Roman (or a similar font), 12pt. Some prefer Arial font type – if you do so, use a font size of 11pt. But in general opinion, Arial is better for presentation slides, but Times New Roman is better for longer texts. Use blocked text alignment (i.e. alignment to left and right), and as in this document, use a spacing between the lines which is a bit larger then 1 line (the author prefers 1.2 lines spacing). Also, the document looks nicer when there is an additional spacing between the paragraphs.

### 2.2 Specific Guidelines for a Seminar Paper

The seminar paper starts with a title page which includes:

- A header of the institution supervising the seminar (i4),
- Title of the seminar topic,
- Name and semester of the seminar,

- Name and matriculation number of the writer, and
- Name of the supervisor.

The title page is followed by a blank page – on the simple reason that it looks better when the back of the title page is empty when printed duplex.

After that, there is to be included a table of contents. Depending on the extent of the topic, it maybe fits on one page, or it needs several pages. If the table of contents has an odd number of pages, add an empty page behind it, as for the title page. If the table of contents has more than one page, add a page header, starting on the second page of the table of contents.

After the table of contents, the contents start. Note that only with chapter one, the pages are numbered, starting with page number 1. I.e. add a page header to all pages, containing at least the page number. It looks better if the numbers are on different sides of the page for odd and even numbers (as shown in this document’s header). If you also had to add a header to the table of contents, it is numbered separately; usually, small roman numbers (i, ii, iii, ...) are used.

At the end of the document, after the content chapters, a list of the used literature is to be appended. Some people also add a table of figures or a list of abbreviations, but in the author’s opinion, this is unsuitable for such short documents like seminar papers.

### 2.3 Figures and Tables

Documents which are completely text-based look very boring; thus you should use figures or tables for explanation. Figures should be numbered as “Figure x: Title”, tables as “Table y: Title”, see e.g. fig. 1.

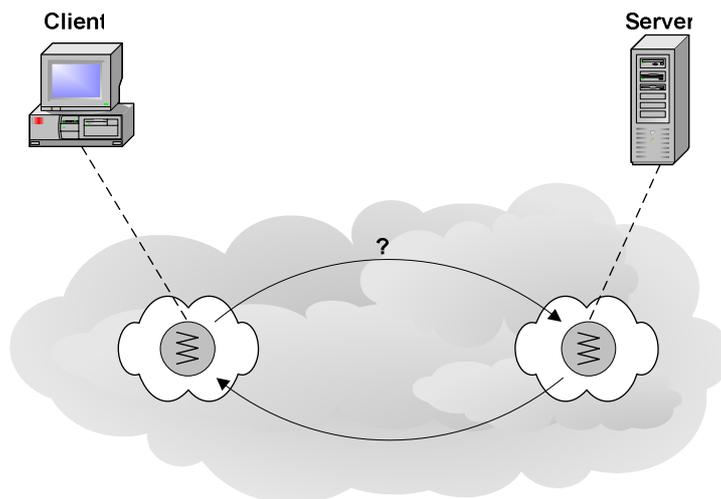


Figure 1: General form of a communication process

Figures and tables need to be numbered independently. Both should be aligned as centred, and it is forbidden to include a figure or a table without explaining it in the text – more concretely: each figure and table included in the paper has to be referenced in a form like “..., see fig.1.”, “... as shown in table 4.” or similar.

Figures also have to be of good quality. Sometimes it is necessary to copy figures from other sources (mostly with e.g. simulation results), but in general you should draw figures by yourself, not copy them from other sources! If you copy figures from somewhere else, you have to make clear from which source they are taken, see fig. 2.

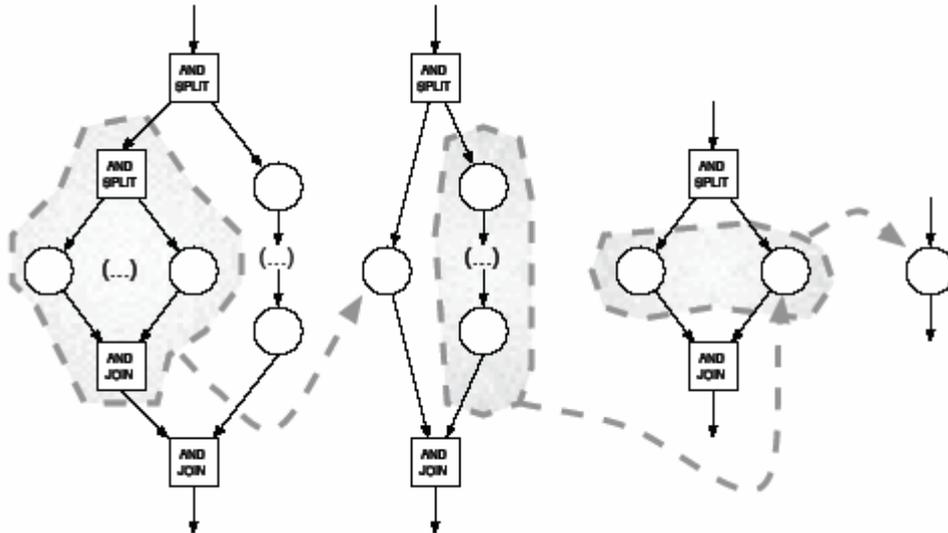


Figure 2: Copied figure (from [JRM04])

Please note: the quality in fig. 2 is insufficient – it has to be drawn on your own instead. No, the author is not willing to hear bawling about “... but this is so much work...”. You decided to study, now you have to live with it.

## 2.4 Readability

It helps the reader in understanding your text, when *core statements* are *emphasized* by using an italic or bold style. In the author’s opinion, italic is the better choice. Some professors say that in each paragraph there should be emphasized words in a form that with only one look one is able to catch the statement of the paragraph by only reading the italic words. But often, it is enough to emphasize the real important words in the chapters.

A very important point to mention here is *orthography* and *grammar*. Often students are delivering seminar papers which are completely confusing because of spelling or grammar mistakes. Those who are not good in these things should give the seminar paper a friend for making corrections. It is not the task of the supervisor to mark such errors; it is simply not acceptable to deliver a work full of mistakes!

## 2.5 Concluding Remarks on Document Format

A good presentation of the seminar paper is an important part of the work; and it will be important also for later works, e.g. diploma thesis (even if for such a thesis the guidelines are a bit different). Think about a document style before starting to write your document, especially if you plan to use something like Microsoft Word for writing. With such a word

processor, pressing on a document structure at a later time is much more work than designing a document template at the beginning. If you decide to use LaTeX [GM05], document format is not such a problem.

Please note: if you deliver a work consisting of lot of spelling or grammar mistakes or which is written without any formatting, it usually becomes very hard to read. *In such a case, the supervisor is allowed to reject your seminar paper without reading it!*

## 3 Structuring and Presentation of Contents

Not only the presentation of a topic is important, also the content should be well structured to help the reader in understanding it.

### 3.1 General Structure of a Seminar Paper

As explained in chapter 2, a seminar paper should start with a title page and a table of contents, and it should end with a literature list. Additionally, there are some raw guidelines how to structure the content itself. The general structure of the contents is like follows:

- **Introduction:** General motivation, goal of the paper, overview of the following contents
- **Related Work:** Overview about works related to the presented topics; to be discovered by the writer in a literature study (see chapter 4)
- **New/Presented Work:** Detailed presentation of the assigned topic
- **Evaluation Results:** An evaluation of the usefulness of the presented topic
- **Conclusions and Outlook:** Short conclusion on the presented work as well as open questions

The following subchapters give some more details on this structure. Please note: there is no reason to name all the chapters of a seminar paper exactly in this way; it is more a list of contents which should be covered in this order, not a fixed division into subchapters.

### 3.2 Structure of the Introductory Chapter

The first chapter is the chapter “Introduction”. You should start with some general motivation of the topic, leading to a short, pregnant formulation of the goal of the paper, i.e. which topic is presented – and why is this topic interesting and/or important.

The second part of the introductory chapter is a raw overview of the contents of the paper. This is to give the reader a fast insight in the work to enable him to maybe skip some chapters and immediately go to the part he is interested in. On this reason, an overview of the structure of the following contents is given here, like done e.g. in chapter 1 of this paper.

### 3.3 Structure of the Concluding Chapter

The last chapter has to be a concluding chapter. Here, the core statements or findings of the seminar paper have to be shortly summarized. This summary is to be followed by an outlook: it should be stated, which questions are still open and what could be done in future to make progress in the topical area.

### 3.4 Other Chapters

There is no general rule how to structure the rest of the paper between introduction and conclusion, but it should be in related work, new work, and an evaluation. In the author's opinion, it is good to describe related work in the second chapter – simply to show gaps in current research and motivate the new approach which is the core topic of the own paper. Others say that related work should only be presented after the description of the own topic, to enable a better comparison of advantages and disadvantages. Nevertheless, related work needs to be included!

Also, there is no general rule how to structure the main contents of the seminar paper. Generally, it is good to write at least two chapters: one of the presented approaches (algorithm, architecture, ...) and one on an evaluation on these approaches (simulations, mathematical evaluations, ...) – but the most suitable structure depends on the assigned topic, thus it should be discussed with the assigned supervisor.

Please note: in preseminars, not a new research topic is to be presented, but some well-known technology. Thus, the structuring as sketched in the present subchapter is unsuitable. Also for a preseminar related work should be considered, but not as alternative approaches, but to explain additional details. Thus it is to be included into the other chapters, not to be presented as an own chapter. But as for seminars, also in preseminars the most suitable structure depends on the assigned topic and should be discussed with the supervisor.

Also, for diploma or Ph.D. theses, some additional guidelines hold – as an example, refer to [Th04].

### 3.5 General Rules on Writing

Beside the structure of a seminar paper, also there are some guidelines on writing style. Usually, it is avoided to use formulations like “I will explain, ...” – it usually is written in third person, and if it is necessary to bring in own opinions, it is used terms like “In the author's opinion...”, i.e. the one how writes the paper is never mentioning himself directly.

Additionally, there are some formulations that should be avoided. It is e.g. bad to say “The author tried to explain...”. Instead, it should be written “The author explained...”. Using phrases like “try” gives a reader the feeling that the authors thoughts have been like “I am not sure about the topic by myself, but I need the paper to be accepted, so I hope that nobody will notice, and give me a certificate, please!”. Use only formulations which make the paper sound well-stated.

One more thing unfortunately has been mentioned: *it is forbidden to copy text from other sources*. A student should read literature on the assigned topic and afterwards write in own words about it. Maybe it is necessary to cite single sentences or to copy a graph, but such things have to be marked as copied. The text in general is to be written in own words. *Seminar papers which contain several copied text fragments from other sources are rejected by the supervisor; furthermore, the supervisor has the right to exclude you from further participation in the seminar!*

In a last comment on writing, abbreviations should be treated. It is only allowed to use abbreviations (ABB) if they are introduced somewhere in the paper before, like shown here exemplarily for ABB. The author cannot expect that all readers know all 1.000.000 ABB existing in computer science, thus you first need to write out a term and define the ABB by setting it in brackets behind the term. But it is enough to do it once per ABB, it is not necessary to write out the whole term followed by the ABB over and over again in the whole paper.

## 4 Literature Study and Usage of Literature

When being assigned a topic, a student gets some initial material on that topic. But it is not sufficient only to read the initial material. The first step in working on a seminar topic is to do a literature survey about related works in the topical area (or about details on technology in preseminars). A reader should be able to see which parts of the paper is completely own thoughts and which parts are basing on which foreign sources. For this, literature is to be referenced in the paper. There are in general three different possibilities for referencing:

- Copying figures/tables and marking them as copied (see fig. 2)
- Copying important sentences and marking them as cited, e.g. “Mit der Menge an Informationen, die über das Internet zur Verfügung stehen, geraten Studenten zunehmend in Versuchung, beim Verfassen ihrer Arbeiten bestehende Texte zu kopieren.“ [Lu05]
- Stating which subchapter/paragraph bases on (not is copied, bases on!) a source, e.g. by adding a sentence like “The work presented in this paper bases on [1], [17], and [114]; some details are from [2] and [8].” Or do it implicitly - for an example, see chapter 5.

All referenced literature has to be included in the literature list at the end of the paper – and in the literature list, only literature has to be included which is referenced somewhere in the paper.

All entries in the literature list have to be complete. For more details on “completeness” of literature entries and on how to sort the literature list, see [Th06].

At the end, a seminar paper is a scientific work – thus it should base on scientific literature. Unfortunately, more and more students mostly use Wikipedia as information source, but this is not an accepted scientific source because there is no guarantee about correctness of entries. A literature list should contain mostly journal papers or conference papers, maybe also a

smaller number of standards or white papers. But Wikipedia or similar sources you are allowed to use only in minor cases – best is to not use it at all.

## 5 DOs and DON'Ts

The previous chapters have given a raw overview about guidelines for writing seminar papers. This chapter gives an additional overview about the most important topics that should be done resp. should not be done in working on a seminar paper [SWT06].

### 5.1 DOs

- Plan a schedule for working on the topic at the beginning. This plan should consider a literature survey, designing a document template, reading literature, writing single chapters, discussion with the supervisor...
- Read the basic material and understand it – usually by consulting more literature in a literature study.
- Have a look to other publications in addition to the comments of the previous chapters to absolutely understand things like conventions about literature, citing, ...
- Give feedback to the supervisor. If you only come back one day before the deadline, usually there is not enough time left for all comments of your supervisor and you are excluded from the seminar. Also hand in parts of the paper in between to enable the supervisor to give feedback early and to avoid that you are writing something completely different.
- Write about the topic in own word using the initial material as well as papers found in the literature survey.
- Have a look to the web pages on hints for seminarists.

### 5.2 DON'Ts

- Do not expect that it is possible to do the seminar work in a few days.
- Do not run to the supervisor for each small problem (e.g. finding literature, spelling mistakes, ...)
- Do not vanish into space for month and come back only a few days before the deadline. As mentioned above, there will be not enough time left for all necessary corrections in such cases.
- Do not copy text from foreign sources! It also is forbidden to use work from other sources with small adjustments in hope that the supervisor will not mention it.
- Do not use an incomplete literature list and also do not use sources like Wikipedia often.
- Do not write in the paper in an unclear way – this gives the feeling that you have not understood the contents.
- Do not ignore suggestions for improvement and advices given by the supervisor!

## 6 Conclusion and Outlook

This paper gave an overview on how to write a seminar paper. As well aspects of document design as aspects of content structure and literature were discussed. Hopefully, after reading this paper the reader is able to write a seminar paper which is formally correct.

Still, there are some topics which were not covered in this paper. The detailed structure of the content chapters was not covered, but here it is hard to define guidelines with fit to all possible topics. Also, design of presentation slides was not covered. This topic is open for future work.

### Literature

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