

How to write a scientific text

Dear students, this is the last module, which will acquaint you with writing (above all) university papers. We will try to give you advice on how to transform your acquired knowledge into high-quality university papers.

Module objective:

- to acquaint you with the process of writing university papers, their formal aspects and division
- to clarify the content of the main paper parts - the introduction, the main body and the conclusion
- to demonstrate the structure of papers
- to teach you how to format your papers properly

Text objective:

This document is a brief guideline on how to create a scientific text (a diploma thesis). Our recommendations are related to the selection of the paper topic, the paper structure and formal aspects of the text. It is important to remind you that the main principle of writing any text is expressing a good idea as plainly as possible.

These guidelines and tips are universal; do not forget to find out the specific requirements of your faculty and department.

Basic terms:

university papers - a collective term for papers which are prepared, written, presented or defended in university environment (seminar and semester papers, final and qualification papers)

final papers - Bachelor's theses, Master's theses, dissertations

qualification papers - assessment papers, rigorous papers and inaugural dissertations

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1. INTRODUCTION

In the last module, you will learn to think through the character of your paper, select a suitable topic and supervisor, write a project, and will become with the essentials and formal requirements of diploma theses.

We believe that this module will help you clarify the essentials of writing scientific texts. None of you can avoid writing such texts, so remember to observe these rules. A well-arranged and structured paper will tell a lot about you.

2. TYPES OF FINAL PAPERS

2.1 Originality of final papers

We distinguish among several types of documents as regards their originality: original documents, summarizing documents, compilation documents.

Original document - contains mostly new information which has not been recorded in other documents.

Summarizing document - summarizes, organizes or generalizes knowledge mostly or entirely adopted from other documents; summarization creates a new value.

Compilation document - repeats information adopted from other documents. The information, however, is adapted to a new objective.

Final papers usually have compilation character; they may contain elements of originality and summarization as well, but the degree of originality is usually relatively low. On the contrary, scientific documents should be based on original information (dissertations and rigorous papers, above all).

2.2 PAPER CHARACTER

In addition to dividing papers according to their originality, there are various types depending on their character: theoretical-empirical works - you use researches that have been conducted, theoretical-application works - they include proposals for certain projects, they are of theoretical character.

3. COMPILATION

We will list the characteristics of high-quality and low-quality compilations. While writing a university paper, you should try to make the quality as high as possible.

High-quality compilations:

- A systematic summary of available information on the topic,
- a synthesis of various views of a certain problem,
- creative approach;
- the result is a research overview in a certain thematic field.

Low-quality compilations:

- A connection of adopted knowledge without logical sequences or systematic order of information - a disordered overview,
- a non-conceptual approach,
- lacks the author's opinion.

Tip: While writing a compilation paper, it is advisable to compare various approaches to the given topic and various opinions (even contradictory ones) of significant authors.

4. THE PROCEDURE OF WRITING PAPERS

The procedure of writing a paper may be divided into several stages. The process and content of individual stages depend on the paper type.

The basic stages are the following:

- ◆ topic selection and preparation strategy,
- ◆ project creation,
- ◆ collection of information from sources,
- ◆ processing information from sources,
- ◆ research, writing the text itself,
- ◆ documentation preparation,
- ◆ final version preparation,
- ◆ paper submission,
- ◆ paper presentation and defence.

4.1 Paper topic selection

It is difficult to determine some general principles of the diploma thesis topic selection - one condition is essential, though: the student must be interested in the selected topic. Hardly anyone is able to write a high-quality paper on a topic which does not interest them at all. The topic selection must be such that the paper communicates something which has not been communicated before, or adopts a new view of something which has been communicated.

Umberto Eco, in his well-known monograph "How to write a diploma thesis", mentions the following advice:

- ◆ The topic should correspond with the study field and the student's interests.
- ◆ Resources necessary for writing a thesis on the selected topic are available.
- ◆ The topic processability corresponds with the cultural niveau of the student.
- ◆ "Who wants to write a diploma thesis or dissertation has to find such a topic which they are able to elaborate."

In other words - we recommend you to consider the following aspects when choosing your topic:

- ◆ interest,
- ◆ manageability,
- ◆ innovation,
- ◆ information availability,
- ◆ the language of available sources,
- ◆ research options,
- ◆ technical difficulties,
- ◆ possible issues,
- ◆ organizational difficulties.

4.2 Diploma thesis project

Most universities require writing a diploma thesis project before writing the thesis itself. The project processing is closely related to planning and the topic selection.

The project must usually contain:

- ◆ The thesis title
- ◆ The name of the supervisor
- ◆ A description of the issue your thesis will deal with (you will describe the reason why you have decided to elaborate your topic)

- ◆ The current state of the issue (you will put together a search of defended diploma theses within your university; the outcome is in the form of an analysis of the current state of the issue)
- ◆ The thesis objective (you will indicate a concrete objective you would like to achieve, i.e. what the result of your thesis will be)
- ◆ Methods of writing your diploma thesis (how you want to achieve your aim, what particular steps you will take, what kind of research you will choose, who you will address, where you will get materials etc.)
- ◆ The main scientific literature (you will do a search and make a list of literature available to you at the moment, and a list of literature you are going to study or seek)

The project enables the student to think through what they are going to write about, what method they will choose and what literature they will use. It often happens that the student realizes that their original idea is vague or non-realistic. The project thus forces the student to clarify their ideas, modify them and make them more real.

5. PAPER STRUCTURE

Before you start working on your university papers, you have to find out the requirements of your department or university as regards the formal aspects of the given paper type. The requirements may differ.

We will now acquaint you with the recommended layout according to the norm CSN ISO 7144. Documentation: formal aspects of dissertations and similar documents.

As regards the formal aspects, papers are divided into three main sections:

- ◆ the entry section (e.g. cover, title page, abstract, keywords),
- ◆ the main section (introduction, the main body, conclusion, list of bibliographic quotations, appendices),
- ◆ the final section (e.g. indexes, résumé).

It is necessary to realize that not all these items have to be included in all paper types (e.g. indexes, lists of figures etc.). It depends on the paper content. Seminar papers and similar university papers which are not so extensive have a relatively simple structure.

We will present the individual sections in more detail.

5.1 THE ENTRY SECTION

Final and seminar papers must have the so-called entry section. With seminar papers, it is usually the title page where you will state: the name of the university, faculty and department, the faculty logo, the paper title, your name and the year.

In the case of final papers, it is usually more pages. You will find an example in the supplementary materials. This section usually contains: a title page (similar information to seminar papers), abstract and keywords, declaration, acknowledgement.

5.1.1 Abstract

An abstract is a brief summary of the text, serving as a point of entry into the paper. It defines the paper objectives, the research methodology, results and conclusions. It is found at the beginning of the paper, before the text itself. Do not confuse the abstract with a résumé. The abstract is usually 150-250 words long.

The entry section also usually contains a declaration that the student has worked on the paper independently, and an acknowledgement to the supervisor and other possible people. It may also contain an annotation and a list of keywords.

5.1.2 Annotation

An annotation is a reduced text briefly characterizing the content of a document and giving information on the author, focus, and the scientific or cultural value of the document. It is a text annexed to the paper. It usually contains a bibliographic quotation of a given publication and keywords. The text does not aim at describing conclusions (as in an abstract) but to sketch the issue. The annotation is usually 5-10 lines long.

5.1.2.1 Keywords

The annotation sometimes contains keywords. You learned to select keywords in the module Problem definition and working with a topic.

5.2 The main section

The main section has the following parts:

- introduction,
- the main body,
- conclusion.

5.2.1 Introduction

In the introduction, the reader should find out:

- the basic information about the content,
- whether the topic corresponds with the information requirement,
- in what ways the paper follows up on the already known facts, and in what ways it differs (a characteristics of the state of knowledge in the given thematic field),
- the topicality of the topic.

The introduction may include hypotheses, expected outcomes, a benefit for your study field. However, do not reveal all the results (leave them for the conclusion).

The introduction should be brief and apposite. A detailed overview of existing solutions of the issue is a part of the text itself - the main body.

While writing, proceed from the general to the specific - you will gradually delimitate the issue you will deal with.

Write the final version of the introduction at the end.

5.2.2 The main body

Have a look at what parts form the main body:

- The current state of the issue,
- Paper objectives,
- Materials and methodology,
- Research methods,
- Outcomes,
- Discussion.

The current state of the issue

- ◆ Detailed information from the introduction.
- ◆ Commentary, analysis and interpretation of the information acquired while processing the documents and other materials concerned with the topic.
- ◆ Reference to key authors and works
- ◆ An objective approach to existing knowledge

The paper objectives

- ◆ A clear development of indicated objectives, logical continuity of the conclusions of the previous sections.

The materials and methodology

- ◆ After having read this chapter, the reader should have detailed information on: what the subject of the research was, how the research went and on the basis of what files (research sample).
- ◆ Enough information in order to be able to evaluate the outcomes and the topic adequacy, and to repeat the study/research.

Research methods

- ◆ Methods of statistical elaboration - e.g. identification of the used software.

Results

- ◆ The basic principle lies in the generalization and presentation of results acquired via experiments or similar activities (e.g. literary analyses, analyses of works of art). From among the acquired knowledge, you choose such that is related to the selected objective. A condensed and integrated description of information while placing emphasis on more significant trends. Hypotheses evaluation.
- ◆ **Tip:** Chapters concerned with methodology and results are written in the past tense.

Discussion

- ◆ A discussion should answer general questions and more concrete impulses which have arisen while working on the topic.
- ◆ The discussion focuses on: the chosen methodology (pros and cons), the results themselves (pros and cons, the benefit of the research), a verification of older findings, hypotheses evaluation, the significance of the paper in theory and practice.

5.2.3 Conclusion

The conclusion should include:

- ◆ A brief summarization of the presented thesis and an evaluation of its outcomes.
- ◆ It is possible to include ideas for further research or suggestions of methodology improvements.
- ◆ It should not only freely follow the ideas of the main body, or fail to correspond with them.
- ◆ **Tip:** While writing the paper, note down ideas and formulations you may use in the conclusion. In the conclusion, you may repeat some ideas stated in the introduction!

5.3 THE FINAL SECTION

5.3.1 Résumé

A résumé is a brief and apposite summarization of the content, a summary of the most important findings and conclusions which the author has reached. It is written at the end of the text. Its most important function is to summarize the content and provide information to those who are interested in the topic. It also enables a quick orientation in various texts. Its usual length is 20-80 lines. It should contain the issue, methodology, outcomes and conclusions.

5.3.2 Index

An index is a secondary document containing a list of important terms or information included in the document. It is not obligatory. There is either a name index (the names of people or institutions) or a subject index (material information). It is also possible to include a list of abbreviations.

5.3.3 BIBLIOGRAPHY

At the end of the paper, you have to include a list of literature and sources you quoted or referred to. Do not include publications you have only gone through!

The order of the used literature depends on the requirements of individual faculties. We recommend you to order everything alphabetically in one list - monographs, anthologies, diploma theses, journal articles. Online sources may be listed in a separate list, but this is not necessary. Quote according to CSN ISO 690 and CSN ISO 690-2.

Remember that failing to list a quotation is against the quotation ethics, and the student may be accused of plagiarism!

6. SUMMARY

We hope that this module has provided you with valuable information, advice and tips for writing above all diploma theses. We believe that from now on, your papers will be high-quality, and we also hope that writing them will cease to be a catastrophe.

This module concludes our course. We have surely taught you many interesting things from the world of information, and we hope you will not get lost in it anymore.

Points to remember

In this module you have learned: what paper types there are, what the procedure of writing is like, how to structure your paper, what the formal aspects are.

Remember: it is essential to select a good topic and a good supervisor; it is important to make a detailed time schedule; do not underestimate the structure and formal aspects.

Dear students, now you more or less know how to write a scientific text. If you want your paper to be really flawless, we recommend you to read appropriate literature. We focused in detail on the characteristics of the introduction, the main body and the conclusion of a paper. You have also learned how to organize the process of writing a university paper. Now you are ready for practical work. Start working, then!