



Formal notes on creation a scientific work

(Research Seminar,
Student research thesis,
Diploma thesis or
Master thesis)

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Hints: This brochure is intended as a guideline for the external design of a scientific paper, not for its content. This information applies only to work carried out at the Chair of Technology and Logistics of Air Transport, Institute of Aviation and Logistics at TU Dresden. The extent of the work (quality instead of quantity counts in principle) depends on the task definition and the processing period or the specifications by the supervisor(s).

Furthermore, the guidelines of the faculty for the preparation of the student research thesis, diploma thesis or master's thesis handed out with the topic sheet must be observed*! Should there be any discrepancies in the information, the guidelines of the faculty have priority.

* For the research seminar, the hints given here, the current task and the hints of the supervisors are formally binding.

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1 General information

1.1 Preliminary remarks

The general guidelines of the TU Dresden as well as the examination regulations of the respective course of studies apply to the preparation of student scientific papers. This document contains further regulations and requirements for such work at the Chair of Aviation Technology and Logistics.

1.2 General Procedure

Topics for study, diploma and master theses are prepared by the staff of the Chair of Technology and Logistics of Air Transport or published in the showcase (usually topics with practical support) next to the POT 164. If you are interested in a topic, please first contact the central topic coordinator (current contact data at: <https://tu-dresden.de/bu/verkehr/ila/ifl/studium/studien-diplomarbeiten/leitfaden>). After the confirmation of the supervision by the university teacher a detailed task is formulated and handed over to the responsible employee of the department "study and doctoral affairs" of the faculty (Mrs. Woditschka). The students have to pick it up there within four weeks.

At the beginning of the work, the students should coordinate the topic, possible boundaries and the rough procedure with the supervisors of the chair. It is also advisable to hold several consultations with the caregivers during the processing phase. After about half of the processing time (according to the valid study, diploma or master regulations), participation in an interim presentation - the so-called "*Bergfest*" - is strongly recommended. Here is the supervisor of the chair (and if necessary employees, external supervisors) of the Chair of Technology and Logistics of Aviation in a ten-minute lecture (ideal with matching slides) one to give a brief introduction to the topic and to present technical aspects of the work (e.g. current status, further work steps, open questions).

1.3 Language and Information Content

The paper must be submitted in German. Deviations from this must be requested from the selection board and approved by it before the work is carried out.

All information and/or data/analyses which are necessary for the understanding and the comprehensibility of the argumentations and results for the examiners are to be attached to the work, since these can be considered only in such a way in the evaluation. Very extensive data are usually kept in the appendix (e.g. on data carriers) to which reference is to be made in the paper. Nevertheless, suitable data extracts must be included in the text to illustrate and trace the procedure.

Technical terms are to be defined and delimited. Aeronautics-specific specialist knowledge is regarded as "textbook knowledge" by the Chair and can therefore be assumed to be basic understanding by the readers.

1.4 Prints of the scientific work

Suitable for scientific work is uncoloured A4 paper. In principle, students are free to print on one or both sides of the paper, but we strongly request that you print on both sides to protect the environment and due to the limited capacity of our archive.

The work shall be typewritten (typewriter or word processing system). Two copies (one original copy + one proof copy) of the student research thesis, the diploma thesis and the master thesis must be submitted and remain with the chair. If the secrecy of the work is agreed (see **Fehler! Verweisquelle konnte nicht gefunden werden.**), another public copy shall be submitted. The subject sheet handed out as well as the assignment must be firmly integrated into all copies (one copy into the correct copy as well as one into the public version copy if necessary). Copies of the work shall be submitted in hardback. The person in charge is responsible for reproduction. The work must be copyable (ink, laser or needle printing). For tables, pictures etc. larger formats than A4 are possible. These are then folded to A4 and firmly bound.

1.5 Secrecy

If the work is subject to secrecy due to sensitive data, a tripartite agreement (TUD, student, third party) on secrecy and use of the work must be concluded prior to registration of the work. For this purpose, students must contact the respective supervising person of the chair in good time. In **this case, a public version of the work must also be prepared and submitted by the deadline in a single copy and in digital form.** The public version is shortened by the confidential information and is no longer subject to secrecy. It should be noted that the public version with the abbreviations made is understandable as an independent scientific work and that the methodology presented is generally valid. In order to avoid the blackout of text within the public version, for example, the factorization of characteristic values or a non-public attachment are good solutions that keep the additional effort of a public version manageable.

1.6 Digital Version

The printout shall be accompanied by a digital version of the work. If intended by the student (e.g. for storing data material/attachments), this can be done on a data carrier enclosed with the work. However, it is also possible to send the version by mail to the maintainer or to import the file(s) personally with a suitable data carrier (e.g. USB stick) to

the maintainer. The **timely submission of a digital version of the thesis on a data carrier is mandatory according to the examination regulations §20 paragraph (6) for traffic engineering and §18 paragraph (6) for the Master's program in Aviation and Logistics as well as the respective guidelines for the study, diploma or master's thesis.**

1.7 Quote

"The work must clearly show which findings come from the editor himself and which were taken from the literature. Text passages taken from the literature, even if only analogously, must be clearly marked with an indication of the sources." (from guidelines to the production of the student research thesis, diploma thesis or master thesis, TUD, Faculty of Transport and Traffic Sciences). It is expressly pointed out that the omitted marking of foreign ideas is regarded as a gross scientific error, which is included in the grading. Violation of copyright laws may also result in legal action.

If information was obtained from discussions with experts and employees of the chair (in person on site or by telephone), a protocol must be drawn up of the discussion, which briefly describes the content of the discussion. The minutes shall be attached to the work in the Annex. The reference in the text to the information shall be to the relevant Annex.

Online encyclopaedias (also their linking to other encyclopaedias), which are open through the web, access (e.g. Wikipedia), do not count as serious, scientific sources and are therefore not considered quotable in student works!

Details on the design of source references and the bibliography can be found in chapters 2.7 and **Fehler! Verweisquelle konnte nicht gefunden werden..**

1.8 Structure

When designing the chapters, care must be taken to strike a balance in accordance with the objectives to be achieved in the task at hand. In particular, explanatory chapters on basic principles should not be representative.

The structure is to be created appropriately and, if possible, limited to three levels. In addition, a consistent structure must be ensured. For example, each outline level should consist of at least two (sub)chapters (e.g. for 5.1.1, a chapter 5.1.2 should be provided).

2 Formal Design

2.1 Page layout and numbering

The actual page count with consecutive Arabic numerals begins from the first page of the text of the work and ends accordingly with the last page of the written explanations. For all other upstream and downstream pages (directories, appendices, etc.) a separate numbering (e.g. with Roman numerals) must be selected. The cover sheet must be counted, but not marked with a page number. The same applies to the topic sheet, tasks and theses.

It is advisable to clearly highlight the page numbers or to place them appropriately (preferably not centred but flush with the outer edge of the text) in order to avoid irritation with regard to any footnotes or selected orientation aids in the headers and footers.

2.2 Margins

The recommended side margins are 3 cm left (space for the binding) and 2 cm top, bottom and right. When printing on both sides, care must be taken to ensure that the margins are properly formatted.

2.3 Typography

The text is to be formatted in justification.

For continuous text, the line spacing should be 1.2 to 1.5 times, ideally 1.3 times. The recommended font size (DTP) is 11 or 12 (70 to 80 characters per line, including punctuation and spaces). The font should be uniform for all elements (headings, figures, tables, appendices, etc.) and should be legible (Times New Roman, Arial, Open Sans, etc.). In general, fonts with serifs (Times New Roman) produce a flow that is easier for the eye to grasp, but are rather unsuitable for graphics. Here it offers itself to fall back on sans serif fonts (Arial etc.).

After headings, figure/table captions, text paragraphs as well as between end of text and a new heading a suitable large paragraph is to be selected in each case. This can be executed as a blank line, but should be at least 6 pt apart. If a new chapter (1st level) starts, a page break (new page) must be made. The further subchapters are to be anchored consecutively in the text.

2.4 Scope

The extent of the student work should always be in proportion to the task as well as to the planned processing time. Ideally, students should present all necessary information and arguments in as short and understandable a form as possible. Depending on the writing style, topic and approach, the individual students will naturally achieve an

individual text size. The following specifications apply to the scope of student work at the Chair of Aviation Technology and Logistics:

Student Work	Scope of the text part (without directories)	
	orientation value	maximum
research seminar¹	10	15
student research thesis	50	80
master's thesis	60	90
diploma thesis	70	100

Table 1: Determination of the scope of student work

2.5 Spelling and Abbreviations

Basis of spelling, grammar and punctuation is the latest edition of *Duden*. Once used, spellings must be retained. Shortcomings in expression, spelling, grammar and punctuation (including appendices) reduce the value of the work.

Abbreviations are also used as in the *Duden*. If you need your own abbreviations, they must be chosen in such a way that they cannot be confused with common abbreviations. A list of abbreviations must also be created for this case. This list of abbreviations need not contain common abbreviations used in the *Duden*.

2.6 Formulas/Symbols

Formulas and symbols are used in accordance with DIN 1338 and 1302/1304. The SI units apply to the units of measurement of the physical quantities. Deviating from this, the usual units are to be used especially in the area of aviation (e.g. foot, nautical mile).

If calculations are made, they must be explained in detail so that it is possible to check their accuracy. In addition, the individual formulae must be numbered appropriately so that a cross-reference to them is possible if necessary. If necessary, sources shall be provided, except for formulae, coefficients and experience from general knowledge.

2.7 Bibliographical References

It is possible to reproduce literature literally or logically.

¹ Orientierungswert und Maximum beziehen sich auf Angaben je Studierender.

When quoting literally, the quote must be identified by quotation marks and must correspond to the original in every detail. Your own comments are enclosed in square brackets. An omission in the quotation is indicated by [...]. The statement of the quotation must not be falsified by the omission. It serves the clarity, to indented literal quotations and to write in narrow lines. Quotation marks are not used for quotations.

Each quotation shall be accompanied by an indication of the (original) source. If quotations are reproduced in a meaningful way, the source(s) must be unambiguously identified by at the latest at the end of the block (before the block point). The allocation of the source to the bibliography is carried out via an unequivocal Marking. We recommend to use one of the following standards, common for engineers:

- IEEE - Citation style developed by the Institute of Electrical Engineers:
Documents in the text according to IEEE: [consecutive number] → [1], [1,4,8], [1-4]
Bibliography at the example monograph according to IEEE: [number] V. Last name and V. Last name, *title, subtitle*. Place: Publisher, year → Example: H. Fricke, *Introduction to air traffic control technology*. Dresden: HF Publishing House, 2012
- DIN ISO 690:
Documents in text according to DIN ISO 690: (surname, year of publication, page number) Example: → (Fricke, 2012, p. 3)
Bibliography on DIN ISO 690 monograph: Surname, first name, year of publication. *Title: Subtitles*. XY. Edition. Place of publishing: Verlag. ISBN XY
Example: → FRICKE, Hartmut, 2012. *Introduction to air traffic control technology*. 1st edition. Dresden: HF Verlag. ISBN 1234
- APA - Citation style developed by the American Psychological Association:
Documents in text after APA: (name, year) Example: → (Fricke, 2012)
Bibliography at example monograph after APA: Name, V. (year of publication). Title. Subtitles. Edition. Place of publishing: Verlag. ISBN XY → Example: Fricke, H. (2012). *Introduction to air traffic control technology*. 1st edition. Dresden: HF Verlag. ISBN 1234

If you prefer a different style of quoting, this should be discussed with the person in charge.

2.8 Footnotes

Footnotes may contain additional annotations, legends, remarks or further explanations to a text or figure/table that would lead too far in the actual text or restrict the flow of text. It is also possible to use the footnote as a source reference (however, this should be avoided as far as possible to ensure clarity).

As a reference sign for footnotes, superscript Arabic numerals ¹ shall be used consecutively across all pages. The footnotes are listed at the bottom of the page in question (note: this assignment is mandatory) with a single line spacing.

2.9 Tables and Figures

If tables or pictures/illustrations are inserted, they must be numbered consecutively and provided with over- or signatures. If they are attached to the work, they must be arranged in the order in which they are mentioned in the text. As a general rule, tables and figures should not be included uncommented in the text.

Tables and figures must be designed in such a way that they are clearly understandable. This includes, for example, meaningful table headers or exact axis designations for diagrams. The colour design of illustrations, in particular of diagrams, must be handled moderately.

2.10 Appendices/Appendices

In the appendices (or appendices) all the documents are summarized which are thematically related to the work, but which would go beyond the scope of the text part or serve only for additional information. The annexes are to be prepared in such a way as to provide a suitable heading and numbering. In the case of several annexes, a list of annexes shall be drawn up. This also applies if attachments are stored on data carriers. This is especially advisable for large amounts of data. The files must be provided with a suitable file name/number so that an unambiguous assignment can be made in the attachment directory.

3 Structure of the scientific work

3.1 Overview of the components

The scientific work consists mainly of the parts listed below. The order of the components in bold must be followed in accordance with their names (in accordance with the Directive in force). For all other possibly necessary parts of the work the listed sequence is to be seen as a suggestion.

front page
topic sheet
task
Bibliographic reference
author's presentation
Theses on scientific work
table of contents
List of Abbreviations*
List of Figures or List of Images*
List of tables*
Formula directory*
text portion
statement
in the case of joint work, a declaration on the parts processed*.
Bibliography or list of sources
List of Annexes or List of Installations *
Appendices or annexes

Supplements (thanks, foreword, glossary ...) are permitted. Components marked with * are not mandatory and should only be created if necessary.

3.2 Front page

Each work must be preceded by a title page. It contains information about the type of work, the subject of the work, personal data of the processor (name, date of birth, place of birth), the supervising university lecturer and, if applicable, other faithful person(s), as well as the submission date and place. Optionally the title page can be provided with the logo of the TU Dresden, the chair and the practice supervisor. In addition, the name of the institution (university and institute/chair) as well as the course of studies attended can be

noted. If you insert a field for your signature on the title page, this must also be done. However, you are free to choose not to fill in this field.

Under no circumstances are personal details such as address or matriculation number to be included on the title page.

Appendix A contains the design pattern of the title page, supplemented by optional information. Here the correct designation of the scientific work is to be used.

3.3 Topic sheet/Task definition

The subject sheet and the detailed task definition must be firmly integrated into all copies of the work to be submitted (in each case as a copy into the correct copy and, if applicable, into the public version copy in the case of a confidentiality agreement).

3.4 Bibliographic Reference/Author's Lecture

The bibliographical reference briefly states again the data of the working person and the topic of the work. In addition, the scope of the work (number of pages, annexes, figures, tables) is recorded there. A sample can be found in the appendix.

The author's presentation presents the content of the text in a short form and completely free of value. It should be understandable even without knowledge of the text and should not exceed 20 lines. The purpose of an author's presentation is to give readers a stimulating outlook on the work (interest in the topic should be aroused). The results of the work, however, should in no way be anticipated.

Note: It is possible and desirable to integrate the bibliographical reference and the author's presentation into one page.

3.5 Theses on scientific work

The theses on scientific work should contain the essential results/statements of one's own scientific work and concrete starting points for scientific discussion. Therefore, the theses sheet does not contain any working theses (hypotheses, provisional theses), but statements whose evidence can be found within the framework of the work. The theses can therefore also be formulated pointedly without justification. The size of the theses sheet must not exceed two pages. The theses are to be numbered and, if possible, included in the work with indication of the number. The theses sheet must be filed at the point mentioned under 3.1 (without page number).

3.6 Table of contents

The table of contents precedes the text part of the paper and is intended to make the structure of the text easy to grasp as well as to make it easier to find certain passages of the text. Therefore, great clarity is important. It is useful to place the (complete) names of

the chapters and subchapters on several fixed alignment lines (depending on the depth of the outline) on the left margin and the page number on one alignment line on the right margin. In addition, it is helpful to set a dotted line between the (sub) chapter name and the corresponding page number (see page II of these guidelines).

3.7 List of abbreviations

In the list of abbreviations for technical terms, no abbreviations are listed which are listed in the *Duden* and are therefore familiar. The technical abbreviations shall be listed in alphabetical order. It is also possible, but not mandatory, to include a brief explanation of the term (glossary).

3.8 List of figures/tables/formulas

Where figures, tables and/or formulae are used in the text, they must be listed separately and with their identification number, subheading or heading and page numbers. The figures, tables and formulas from the appendices must also be integrated here. Using a suitable identification number, a distinction should be made between the illustrations, tables and formulae of the text part.

3.9 Text section

The text part is the essential part of the scientific work and reflects the actual achievement wider. It shall be subdivided into chapters or subchapters, each of which shall have a meaningful heading.

Emphasis (individual words, word groups and proper names) can be made by underlining, *italics*, **boldface**, SMALL CAPITALS or s p e r e n t s . However, the latter should only be applied to individual words, as it can significantly impair the reading flow. It is also advisable to choose between one or two types of highlighting and to apply them consistently depending on the objective.

The text part should be characterised by a uniform style throughout, which should also be applied to the figures, tables and appendices.

3.10 Declaration / Declaration on group work

The declaration must be attached to the scientific work (except for the research seminar). The text can be taken from the example in Annex C. If a group work has been carried out, each student must complete such a declaration in which the part worked on is mentioned.

3.11 Bibliography

The bibliography (or source list) contains the bibliographical information of the literature used in the work. All sources used must be listed in full. At the end of the paper, the list is

to be appended separately and arranged in logical order (depending on the citation style (cf. 2.7), e.g. numerically (ascending according to the text) or alphabetically according to author). Depending on the citation style, a separation between literature and Internet sources must be implemented. Further categorisation, e.g. with regard to legal texts, journals, etc., is possible.

3.12 Appendix

See the explanations under 2.10.

APPENDICES

Appendix A: Design of the title page of a study, diploma or master thesis (sample)

Appendix B: Bibliographic reference/author's presentation (sample)

Appendix C: Explanation (sample)

Appendix A: Design of the title page of a study, diploma or master thesis (*sample, attention: without header and page number*)

Technische Universität Dresden
"Friedrich List" Faculty of Transport and Traffic Science
Institute of Logistics and Aviation

Student research thesis, diploma thesis or master thesis (*use as appropriate*)

Naming of the topic according to the task

submitted by *first name and surname*

born on: in:

Supervisor:

- *title and name of university teacher*
- *title and name of the supervising assistant (if applicable)*
- *if applicable, title and name of a practice supervisor / department*

Dresden, the

.....

Signature of the student

Appendix B: Bibliographic Reference/Author's Lecture (Sample)

Bibliographic reference

Name, first name

Title of student research project, diploma or master thesis t

Study, diploma or master thesis (*use as applicable*)

Technische Universität Dresden , "Friedrich List" Faculty of Transport and Traffic Sciences,
Germany

Institute of Logistics and Aviation, Chair of Air Transport Technology and Logistics

Course in Traffic Engineering or Aviation and Logistics (*Use as appropriate*)

X pages, X illustrations or pictures, X tables, X sources, X annexes or appendices

Author's presentation

Gives the reader a short informative outline of the content of the paper (no results), max. size 20 lines.

Annex C: Declaration (model)

statement

I hereby declare that I have independently written the *student research thesis, diploma thesis or master's thesis* submitted by me today and that I have not used any aids other than those specified.

Dresden,

.....
Signature of the student