

THESIS GUIDELINE

CAMPUS CHAM



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1 PREFACE TO THESIS GUIDELINE

The following thesis guideline on structuring papers against a technical and/or scientific backdrop is in accordance with the standards generally applied by German universities. Principally, this guideline neither is to be deemed an official instruction by Campus Cham, the Faculty of Applied Natural Sciences and Industrial Engineering nor the Deggendorf Institute of Technology. Moreover, this guideline does not raise any claim to completeness but instead summarises the most essential information on structuring scientific papers from the editorial point of view. Any deviating or supplementary requirements of individual supervisors cannot be ruled out entirely. As a consequence, in any event, content and formalities are to be discussed primarily with the individual supervisor in charge.



2 FROM TOPIC SELECTION TO THESIS SUBMISSION

2.1 TOPIC SELECTION - GUIDING QUESTIONS

- Which topics have already struck a chord with you during your lectures?
- Do you have any particular knowledge, skills or interests you could cover?
- How relevant is your topic in the industry or your aspired working area?
- Which current position does your topic occupy within the research environment?
- To what extent is your topic similar to other topics?
- What makes your topic different from those related topics?
- What do you plan to find out with your thesis? Which further sub-questions might arise in the process?
- Is sufficient literature and statistical data available on this topic? How reliable, credible and objective are your sources?

Entitling your Topic

Pay attention to a concrete, meaningful and linguistically correct wording of your thesis title. A title length between one and two lines is recommended. The title selected will emerge on your graduation documents and renders employers the very first impression of your scientific competencies.

Internal vs. External Thesis

Apart from a DIT supervisor, you are also allocated a company supervisor in external theses. Frequently, a particular topic has already been pre-defined by the company you are about to conduct your thesis with.

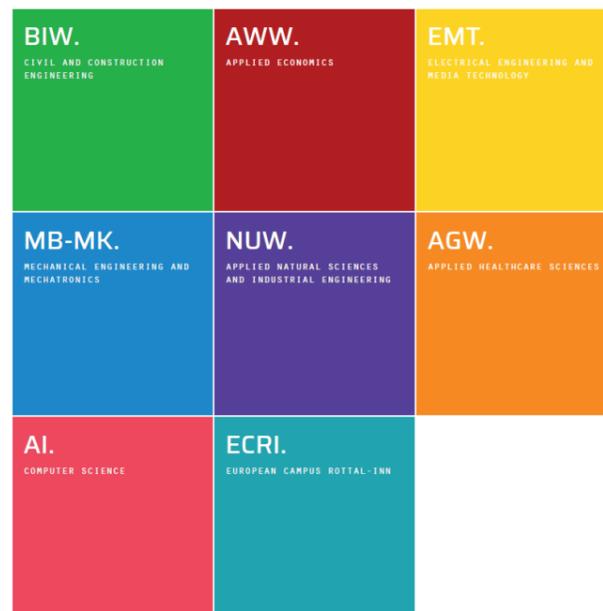
Internal Thesis	External Thesis
No balancing act between company supervisor and DIT supervisor	Insights into the working environment; head start for the application process: you already have one foot in the door; salary
Freer, scientific composition with your own topic proposal or a topic proposal given by your supervisor	Practice-oriented form

2.2 LOOKING FOR A SUPERVISOR

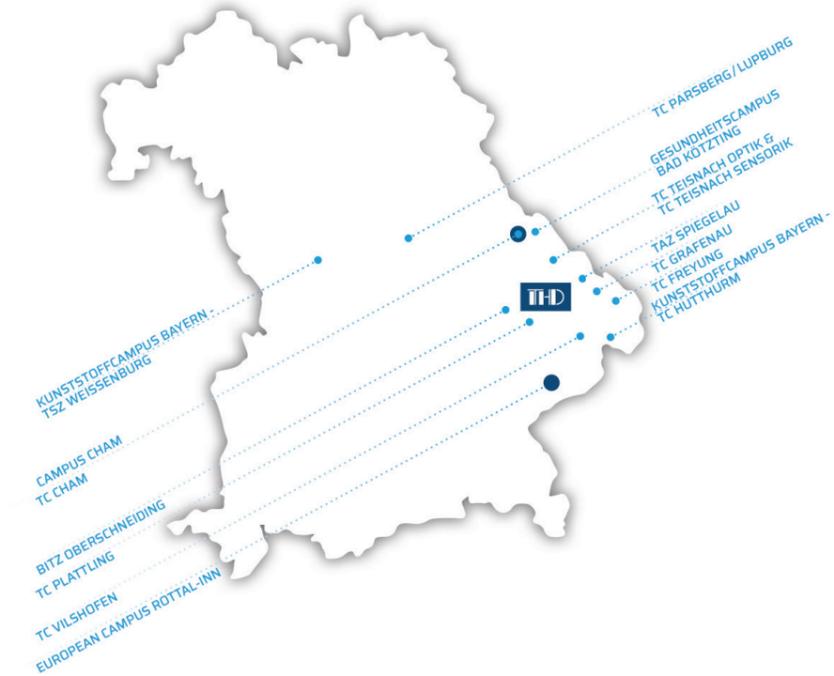
Draw up a specific topic proposal in answer to the questions stated under Topic Selection 2.1

Conduct your own independent research on the DIT website: Who fits your topic best, technically speaking? Apart from supervisors on Campus Cham, you can also request other professionally qualified supervisors from the eight DIT faculties:

Link to the Faculties: www.th-deg.de/en/students/faculties



Potential supervisors are also located on the current thirteen technology campuses, DIT research institutes specialised on specific core themes. Link to the Technology Campuses: www.th-deg.de/en/research/technology-campuses



Show initiative: independently contact supervisors preferred based on your previous research and ask them for their supervisory capacity. A targeted and well-justified supervisor research in combination with a well-elaborated topic proposal already allows for a positive first impression!

2.3 REGISTRATION PROCESS

Please register and submit your thesis directly via the Primuss portal. Further details and the upload fields can be found in the Primuss portal at: Registration/Submission of Thesis.

For any content-related questions, please contact the person responsible at the Centre for Studies. <https://www.th-deg.de/en/study-with-us/advice-support/admin-centre>

For any technical questions, problems regarding the upload or similar, please contact the Primuss support. (primuss-support@th-deg.de).

2.4 DRAFTING STAGE

- Independently arrange individual supervisory meetings.
- At best, autonomously prepare yourself for each supervisory session, for instance, reflect on specific queries on problem-solving difficulties or software requirements that appeared during the drafting stage of your thesis.
- Regularly work on parts and sections of your thesis so that your supervisor can give you valuable feedback at different drafting stages of your final thesis.
- At the end of each supervisory session, take notes of specific sub-goals you intend to achieve until the next supervisory session.

Master Seminar

- Together with your supervisor, by the end of your thesis processing time, arrange an appointment for the oral presentation your final thesis.
- This presentation is part of the overall grade for your final thesis.
- Bachelor Module: Bachelor Thesis (12 ECTS) - Bachelor Seminar (2 ECTS)

- Master Module: Master Thesis (22 ECTS) – Master Seminar (2 ECTS)
- Length of Presentation: approx. 15min /
- Subsequent examiner questions: approx. 15min

2.5 SUBMISSION PROCESS

Please register and submit your thesis directly via the Primuss portal. Further details and the upload fields can be found in the Primuss portal at: Registration/Submission of Thesis.

Upon your supervisor's request, a hard-bound written copy of your thesis additionally is to be submitted. Please get in contact with your supervisor in advance.

For any content-related questions, please contact the person responsible at the Centre for Studies.
<https://www.th-deg.de/en/study-with-us/advice-support/admin-centre>

For any technical questions, problems regarding the upload or similar, please contact the Primuss support.
 (primuss-support@th-deg.de).

3 | OUTER & INNER FORM

3.1 PAGE COUNT

For bachelor theses, an approximate number of 50 text pages is recommended. For master theses, an approximate number of 80 text pages is recommended. This page count excludes the table of contents, the bibliography, formula directories or the appendix. A margin of tolerance of plus/minus 10% of text volume is accepted. Any individual deviations from this page count are to be clarified with the supervisor initially. Further recommendation: The content-related quality of final theses generally does not rise proportionally with the page count. Frequently, the focus on the most significant topical aspects is more meaningful than long-winded, wordy explanations of irrelevant details.

3.2 TEXT AND PAGE LAYOUT

All pages are to be printed one-sided in DIN A4 format.

Type of Font	font types sans serif, e.g. Arial, Verdana.
Use a coherent font type for capitals, equations, text passages, image/table captions and page numbers.	
Font Size	11pt - 12pt; chapter headings: 14 pt.
Font Colour	black
Margins	top and bottom: 2.5 cm; left: 3 cm; right: 2 cm
Line Spacing	1.5 single-spaced
Header and Footer	consecutive page numbers
Formatting	justification with automatic hyphenation (continuous text)
Structure	1, 1.1, 1.2, 1.3, 2, 2.1, 2.1.1, 2.2...
The different structure levels are numbered with the Arabic number system. The final structure level is not concluded with a dot.	
Page Numbers	right-aligned on the right-hand side

3.3 LINGUISTIC STYLE

Scientific papers pursue an objective and concise language style, i.e., all steps and results are to be transparent and understandable for third parties to meet the requirement of verifiability. You are thus to select precise descriptions defining all steps, results and terminology used in a definite, graspable, and clear manner.

Recommendations	Examples
Do not write in the first person under any circumstances.	„Initially, I measured the voltage at the output terminals“.
Use passive voice.	„The voltage was initially measured at the output terminals“.
Avoid using trivial subordinate clauses or multi-clause sentences too convoluted.	„Taking a closer look at the curve, one notices that...“
Use active clauses of statement.	„The curve illustrates that...“
Avoid starting sentences with conjunctions.	„And...“, „That...“, „So...“
Avoid using abbreviations commonly used in oral language.	„trfr = transformer“, „ACC = accumulator“, „alu = aluminium“
Avoid using redundant filler words. Try it out: omit the filling word. If the predicate stays the same, the expletive is redundant.	„also“, „now“, „still“
Phrase complete sentences.	subject, predicate, object
Avoid vague or too general statements implying that something has not been successful or that the author is not confident in their statement.	„The following chapter is meant to demonstrate...“
Use precise statements to express that your research goal in fact has been reached.	„The following chapter demonstrates...“
Avoid accumulating unspecific terms.	„synergy“, „process“, „system“, „procedure“
Avoid set phrases that might give your readership the impression that you are looking for gap fillers to meet the page count required or that you question their short-term memory.	„As already shown by illustration 3“, „As already described in chapter 7...“

Headers in technical texts/contexts	<ul style="list-style-type: none"> do not indicate any sources, abbreviations, or punctuation Are not underlined or indented
Headers in technical texts/contexts	<ul style="list-style-type: none"> are best to fit on one single line start with capital letters and are put in bold within the text have the same font type as the text
Avoid personal opinions or conclusions.	unfortunately, fortunately etc.
Avoid exaggeration.	enormously, vastly, drastically etc.

3.4 ORTHOGRAPHY

Orthographical Rules	Examples
Figures bigger than twelve are written as numbers in the continuous text.	13, 14, 15, 16...
Figures smaller than twelve are written out fully in the continuous text, except for physical quantities.	The circuit consists of four diodes with a current load capacity of 8 A each.
Technical compound words are joined with a hyphen in German. In English-speaking areas, no hyphen but a space is to be put between figure and unit.	230 V power supply, 5 Ω resistor
The following abbreviations consist of two words and are to be separated from one another with a space.	e.g. etc. i.e.
Refrain from putting a space after the opening bracket and before the closing bracket if you want to include additional information.	... (according to DIN 1421).

- Use the spellchecker of your text programme
- Revise your final thesis in several stages, not all at once.
- Read your written work out loud.
- Typos are often identified if the work is not read directly after writing but a few days later to get some distance.
- Two heads are better than one: It's best to have your written work proofread by a non-specialist.

3.5 ILLUSTRATIONS AND TABLES

Each table is to be entitled. The table content is to be taken up within the continuous text passages.

Recommendations	Addition
Illustrations are to be included in their original form or quality.	Generating an illustration in a vector graphic programme or a table in a text system, for instance, allows for a higher quality of illustrations.
Clearly associated image captions in the same font as the continuous text.	Background colour, line weight, caption, size and grid of time and frequency responses.
Illustrations and tables are to divide the text between paragraphs.	Illustrations are not to be framed.
Illustrations and tables are to remain within the page margins.	Avoid placing illustrations or tables on one single page, except for result presentations in long text passages.
The emblem of the DIT is exclusively to be used on the thesis title page in the required form.	A company emblem may neither be used outside or inside the thesis.

Table 1: Criteria for using illustrations

3.6 FORMULAS, FIGURES AND PHYSICAL QUANTITIES

Dos	Don'ts
An alphabetically sorted formula or abbreviation directory is recommended at the very beginning of your thesis.	Do not write out units within technical contexts.
As far as possible, internationally recognized formula symbols are to be used, e.g. „I“ for the current. Once the formula symbol is used for the very first time in the text without being included in a separate formula directory, an explanation is necessary for the corresponding formula.	Sentences are concluded using a dot, an exclamation mark, or a question mark. Should an equation be at the very end of the sentence, the dot is to be placed upon the equation. In this case, the equation is not to be introduced by a colon either.
Physical quantities are to be placed in one line. Automatic hyphenation might call for a fixed space to be put.	Do not start a sentence with formula symbols or figures.

A space is put between the numerical value and the unit, e.g., 2,3 A. In German-speaking areas, the decimal separator is a comma. In comparison, a dot is used in English-speaking areas instead.	When specifying physical quantities with decimal separators, there is no space to be put after the comma.
Physical quantities and equations are to be written in the same font type and font size as the text passages.	The unit of physical quantities is not to be written in italics. In terms of equations, not only units but also constants, such as „e“, „i“ or „j“ are written as an imaginary unit. Furthermore, the „d“ standing for differentials or integrals is not to be written in italics.
Formulas are either left-justified or set centrally.	Upon a heading with text, you are not to continue the text with an illustration, table or an equation.
Should formulas be numbered in the text, the corresponding figure is either placed to the right of the equation or right justified at the right margin. Equations are to be written outside of sentences or to be included within sentences, including punctuation. Equations in paragraphs are to be placed on one line.	The multiplication symbol „·“ is to be preferred and is not to be written using the „x“ symbol standing for an equation or cross product. Equally, multiplications neither are to be written as „*“ nor using a normal dot „.“

Table 3: Recommendations and objections on writing physical quantities

4 | CONTENT ASPECTS

4.1 FORMALITIES

4.1.1 TITLE PAGE

4.1.2 RESTRICTION NOTE / NON-DISCLOSURE AGREEMENT

For the disclosure of sensitive data, some companies may ask for a non-disclosure agreement within the framework of the final thesis, which serves to exclude third parties viewing the thesis content explicitly within a separate restriction note. This process is not supported by the DIT and is to be avoided in consultation with the corresponding company.

4.1.3 INEXPEDIENT COMPONENTS: ACKNOWLEDGE

Optionally, an acknowledgment dedicated to people involved may be incorporated into the final thesis:

- Company supervisor and key staff involved
- DIT supervisor
- Inner circle (e.g., parents, friends)

4.1.4 STATEMENT OF AUTHORSHIP

This document is to be filled in, signed and incorporated into the final thesis.

4.1.5 INDEX OF ABBREVIATIONS

For first-time use in the text, technical abbreviations are to be written out fully once and put in brackets. Commonly used abbreviations (e.g., etc.) are not to be noted within this index of abbreviations, which is to be sorted alphabetically.

4.1.6 ABSTRACT

The abstract is optional for potential publication and describes complex problems and work results under the specification of key words.

Ecommended word count: 120 - 150 words

4.2 CORE CONTENT

The research question or the detailed task definition are to be formulated clearly at the start of the thesis. Also, this is to be marked within the structure. Keep oriented on the complex problem or research question you are dealing with in your final thesis. This common thread is to run through your thesis in order to clarify the coherence between the individual chapters.

4.2.1 INTRODUCTION

Captivate your readerships' interest in your topic right from the beginning and, for instance, put your topic on a larger scale!

- Historical reference, development over time, e.g., quotations
- Relevance (reference of facts, key figures, recent developments)
- Definition of a central concept within your area of research

Showcase the relevance of your topic by covering the following questions in the introduction part:

- Which fundamental goal you plan to pursue with your final thesis?
- What is the state-of-the-art or latest state of research in your topic?
- Have parts of your research question already been treated elsewhere?
- Which open research questions still justify your final thesis?
- Which methodological approach have you taken for problem-solving?
- Were there any pros or cons associated with your solution approaches?
- Draw a relation to the table of contents: How is your final thesis structured?

Recommended page count: 1-3 pages

4.2.2 GROUNDWORK/FUNDAMENTAL PRINCIPLES

Within the section of groundwork and fundamental principles, you are to describe the background of your final thesis in detail. Particular topics that require specific technical knowledge call for a repetition and explanation of the groundwork and fundamental principles your thesis idea is based upon. This section further explains all elements necessary for understanding the consecutive methodological chapters. For instance, theories and models that contributed towards answering research question, are described precisely. Moreover, key terms and concepts of the final thesis are to be described and delineated.

Which scientific/technical principles have you required to solve the task? Which empirical results already exist on your topic? Have there been any approaches taken by other authors who have dealt with your task or a similar research question before?

Recommended page count: approx. 8 - 16 pages

4.2.3 METHODOLOGY

This part makes for the core component of your final this and explains the approach taken methodologically. You can either draft a separate chapter for individual problems or separate them logically from one another, e.g., problem analysis, process selection, execution, and implementation. Clearly highlight your own work from previous work conducted by someone else. What has been developed and implemented within the framework of your final thesis? Pin down your topic into a scientific context: Which previous groundwork and theoretical backgrounds have already been available in advance? What is the latest state of research?

Within this section, you are to describe the solution to the task or problem completely, i.e., any material or research related to your topic investigated is to be expounded as gapless as possible.

Is your thesis practically oriented?

Conduct measurements and describe the devices used, their measuring accuracy as well as experimental test setups.

Is your thesis theoretically oriented?

For instance, describe models, circuit plans, simulations, requirements, structural elements, or data sets.

Demonstrate your thoughts clearly.

Why have you decided for method A instead of method B, for example?

Recommended page count: 2-4 chapters with 10 - 20 pages each

4.2.4 RESULTS

In this part, you are to initially present and explain the results, which are later interpreted based on the task or research question posed.

In this section, results are neither evaluated nor discussed yet. The clear, precise representation of results, from simple to complex, is to be written in past tense. Instead, this section is to show why the methodology used in the previous chapters have (or have not) solved the initial task or research question stated in the introduction part. Comparisons between your own solution and the processes described within the section on the latest state of technology, are best to be depicted by means of tables or graphics.

Has your testing been comprehensive?

- First of all, describe the individual results obtained.
- Then, summarise the most essential results, for instance, using a clearly structured table.
- If you used illustrations, make sure to explain them within the continuous text passages.

Have you determined inaccuracies with measured data?

- Deal with their effect on the results.

Applicability of your results: Which specific findings were you able to obtain from your final thesis?

- Are your results applicable to any other company divisions?
- Are your results applicable to any other companies of the same sector or type (e.g., corporation, medium-sized business?)
- Are your results applicable to any other scenarios?

Recommended page count: 4 - 12 pages

4.2.5 SUMMARY & PROSPECTS

- Summarise your scientific work succinctly. Again, refer to the research question/task, the solution approach taken, the most crucial results and their evaluation. Precisely answer the questions posed in the introduction part (4.2.1) without discussing new trains of thought in the conclusion.
- Reflect upon your final thesis again from a distance and reflect critically: What worked well, what could have worked better?
- Which answer could you find to your research question?
- Provide your readers with an outlook on the future given the fact that scientific problems can rarely ever be shed light on all their facets. Was it not possible to answer all aspects of the research question or have even new questions arisen in the process that yield further ideas for possible solution approaches?

Recommended page count: 1-3 pages

4.2.6 BIBLIOGRAPHY

Scientific papers, such as final theses, are to be composed in a righteous and honest way. All sources used are to be verified by correct citation including the respective literature reference. Following the main text, all sources cited within your thesis are to be referenced in accordance with the DIN norms. Sources are either numbered upon the respective citation order or alphabetically sorted.

[1] Leschik, M.: Word für Windows 6.0, Wissenschaftlich Arbeiten, optimal. 2. Aufl. Koschenbroich, bhv-Verlag, 1994.
[2] Jäger, H.: Persönliche Mitteilung. Göppingen, FHTE, 1999.

Within the continuous text itself, the corresponding citation is to be quoted by means of squared brackets, for instance:

...according to [1, page 233], this process can be facilitated using joints.

Avoid plagiarism and clearly highlight your sources. Reliable sources encompass specialist/technical literature, articles in technical journals or specialist articles from reputable authors published on the Internet.

Always specify the actual date you accessed respective web sources on.

Rodemann, Julian (2020): Chemie-Nobelpreis geht an zwei Genforscherinnen, in Süddeutsche.de, 08.10.2020, [online] <https://www.sueddeutsche.de/wissen/nobelpreis-2020-chemie-1.5057356> [accessed on 11.12.2020]

General Recommendations for Literature Research :

- read the abstract at the beginning of the article
- consider the structure of the article
- highlight important content or key words and take notes
- skim-read the text and only use selected content of the article
- critically examine content and compare or combine the chis content with further literature

Recommended Reading

[1] Ebel, H. F.: Bachelor-, Master- und Doktorarbeit: Anleitungen für den naturwissenschaftlich-technischen Nachwuchs. 4. Aufl. Wiley-VCH Verlag GmbH & Co. KGaA, 2009.

[2] Hohmann, S.: Wissenschaftliches Arbeiten für Naturwissenschaftler, Ingenieure und Mathematiker. Springer Vieweg, 2014.

[3] Leschik, M.: Word für Windows 6.0, Wissenschaftlich Arbeiten, optimal. 2. Aufl. Koschenbroich, bhv-Verlag, 1994.

[4] Standop, E.: Die Form der wissenschaftlichen Arbeit. 14. Aufl., Heidelberg, Wiesbaden: Quelle & Meyer, 1994.

[5] Theisen, M.: Wissenschaftliches Arbeiten: Erfolgreich bei Bachelor- und Masterarbeit. 18. Aufl. München: Vahlen, 2013.

[6] Weissgerber, M.: Schreiben in technischen Berufen: Der Ratgeber für Ingenieure und Techniker: Berichte, Dokumentationen, Präsentationen, Fachartikel, Schulungsunterlagen. Publicis Publishing, 2010.

[7] Werder, L.: Lehrbuch des wissenschaftlichen Schreibens. Berlin, Milow: Schibri, 1993.

How to cite a publication

Generally, it's necessary to cite all references taken over. This applies to almost every sentence or paragraph in literature work. The more references you cite, the higher the value of your scientific work.

Your reference list needs to be sorted alphabetically according to the surname of the first author. Each entry needs to contain all relevant information like: Names of author(s), year of publication, title of publication, name of journal, book or article, publisher, digital object identifier (weblink including access date).

References from scientific journals need to be cited as follows:

name of author(s), year of publication in brackets, publication title, name of the scientific journal in italics, page range.

(2020) Adams, P., & Doe, J. Title of the publication. Name of the scientific journal, 1(2), 5-9.

Book references need to be cited as follows:

author(s) name, year of publication in brackets, publication title in italics, publisher

Glasman-Deal, H. (2010). Scientific Research Writing. London: Imperial College Press.

Skern, T. (2011). Writing Scientific English: A Workbook (2 ed.). Wien: UTB facultas wuv.

Web references need to be cited as follows:

author(s) name, year of publication in brackets, publication title in italics, access date and the web link.

Maxwell, A. (2020). Write like a scientist. Retrieved September 19, 2020, from <http://sites.middlebury.edu/middsciwriting/>

4.2.7 APPENDIX

As soon as your thesis is comprised of comprehensive materials, for instance, measurement and computation results or data sheets of devices, including an appendix is highly recommended. Programming codes, for example, are to be saved onto the electronic data carrier and not to be included in the print version.

- Separate the appendix by a separate title page from the rest of your written work
- Depending on the type and extent of your thesis, the appendix could be divided up into several sections, all of which are to be indicated on the table of contents.
- A separate numbering of each individual attachment is recommended, e.g. A1, A1.1, A1.2, A2, A3...

A1: Registration Form

A2: Title Page

A3: Restriction Note/ Non-Disclosure Agreement

A4: Statement of Authorship

5 | CHECK LIST

Please enter your thesis registration in Primuss and generate the registration form as a pdf file.

The pdf file, signed by the student, must then be uploaded back to the portal.

The supervisor does not need to sign, he/she will receive an email and can confirm the registration digitally.

Upon your supervisor's request, a hard-bound written copy of your thesis additionally is to be submitted. Please get in contact with your supervisor in advance.

Please submit the agreed form of thesis to the lecturer and upload the required documents to Primuss (zip file of the thesis and approved thesis topic).

The Centre for Studies ensures that all documents have been uploaded correctly and sets the thesis status to 'submitted' (please be patient here as well. If everything is in order, the online submission date is recorded as submission date.)

Editors:
Stefanie Liegl, M.Sc.,
Prof. Dipl.-Phys. Jürgen Wittmann,
Prof. Dr.-Ing. Peter Firsching,
Prof. Dr. Frank Denk

Version 2.0, 13.01.2023

