

# **OTTO VON GUERICKE UNIVERSITY MAGDEBURG**

**Faculty for Process and Systems Engineering**



## **INSTRUCTIONS**

**to**

**Design and defend  
Master Theses**

Magdeburg, 09<sup>th</sup> January 2012

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## 1 Structure of the Thesis

- Title page,
- Task,
- Summary,
- Statement on self-made work and to the chosen aids,
- Table of Contents,
- Nomenclature (if needed),
- List of abbreviations (if necessary),
- Text with summary, Introduction, Main part, Conclusions,
- Referances,
- Appendix (if any)

## 2 The content of the text

2.1 The summary informs the reader about the problems that are treated in the work, what was the methodic way and how the problems were solved. The main results and the progress made must be shown. In addition to the task the summary provides information, enabling the reader to decide whether the work is interesting to him.

2.2 The introduction should lead the reader to the subject to be treated and respond to it:

- The nature of the task,
- The outgoing situation,
- Problem and motivation for the work
- The purpose and importance of work as well as their scientific and economic classification.

The range of the introduction should not be stretched too far and you should quickly come to the "cause".

2.3 The main part contains a complete description of the problem's solution in detail.

2.3.1 A key focus for the structure is the effective transfer of written information to a professional reader, who may not be directly familiar with the problem.

These include:

- A clear illustration of the thought process that leads from the state of knowledge at the beginning of the work to the developed solution,
- A good layout and logical arrangement of material limited to the essentials,
- Understandable, clear and concise formulations without wordiness and decorative wording (avoiding the "narrative style"),
- A clear, concise, readable and clear presentation.

2.3.2 The state of knowledge is given by results of preliminary studies and previous publications. Settlement proposals for the solution of the problem will be discussed. The adopted solution is to establish and delineate. Also unsuccessful tests will be evaluated so that they are not taken up again in subsequent work without success. The structure and series of the presentation of the material are governed by objective criteria, not according to the chronological order of the work. The section headings are to be designed so that they are sufficiently meaningful even without knowledge of the text below it.

2.3.3 The description of the studies must be so detailed that they can be repeated, if necessary, under the same conditions also making the results reproducible. For this, the main investigations and the applied methods and procedures should be presented in the appropriate form. All used tools, such as literature, formulas, programs, methods, measuring methods, etc. are to be indicated. Acquired results or solutions must be explained by reference to the source only to the extent it is necessary to understand, but not that they can be produced again.

Measured or calculated results and functional relationships are represented clearer and more understandable by graphs or in tabular form, as a rule, than by long verbal descriptions. Extensive mathematical derivations or proofs, images or table collections, by which the relationship of the text is broken, should be given in the attachments. The same applies to original lists of various types, provided they can serve as evidence for the origin of the investigation results.

Other scientific and technical facts and contexts are often better represented graphically than textually. It should be noted, however, that does not always succeed in a representation which does not need any textual explanation. On all components of the thesis (pictures, tables, literature, attachments) references must be made in the text, that means it must be mentioned in a suitable passage, at least.

- 2.4 The conclusions, as the last section of the text, include clear and critical statements about:
- The results of the work and its importance
  - The limits of validity and the progress towards the state of knowledge at the beginning of the work,
  - The application of the results,
  - Reasons for not reaching the goal or part of goals,
  - Recommendations for further work, if possible.

### **3 The formal structure of the thesis**

#### 3.1 Structure/Layout

- 3.1.1 The thesis has to be submitted in DIN A4 - either Word or PDF format. A printed copy for each reviewer must be made available.

The text has to be written with 1 ½ times the line spacing. The preferred font is Arial or Times New Roman with size 12.

For text pages, even with images or tables, margin widths are accepted between 2.0 cm and 2.5 cm.

- 3.1.2 The topics listed in Section 1 begin on a new page. All pages of the thesis shall be continuously provided with page numbers. Text pages in the appendix are numbered separately.

#### 3.2 Formal content

- 3.2.1 The title page must be designed according to the example in the appendix of this instruction manual.

- 3.2.2 The content list's numbered headings of the sections of the thesis and the beginning page numbers must be listed. In addition, the attachments has to be included. The numbering of the pages should begin with the first page of the introduction as page 1. Pages prior to the introduction should be numbered with Roman numerals.

- 3.2.3 A list of symbols has to be given. All symbols should be ordered alphabetically. The list of abbreviations should also be included.

3.2.4 The references include all used citations. In the text, the references have to be identified with a sequential number, which is set in a square bracket (example: ... been studied in [5] ...). The references are then listed in the appendix with this number.

Alternatively, the literature can be cited by mentioning the names of the first two authors with the year of publication (example: ... Schmidt and Mueller (2009) also investigated ...). When more than two authors exist only the first two authors have to be mentioned and the others marked by "et al." (Example: ... in Meier, Schulze, et al. (2009) also investigated ...). In this case, the references in the appendix are arranged alphabetically.

If several papers exist by one author published in the same year, the number of the year is added by a, b, c and so on (example: ... Muller (2009c) also investigated ...).

Rules for the title information of various publications are given in Section 3.6.

The citation must ensure that the used references can be found, so that the reader has the opportunity to read it by himself.

### 3.3 Formal text design

3.3.1 Mentions in the text to other sections must be made by indicating the page number or section number. For this, electronic bookmarks should be used, which are offered by word processing (are automatically updatable). Images, tables, equations should be indicated by specifying with the appropriate number.

These marks should not install as footnotes.

3.3.2 Equations and formulas have to be written using separate lines. They must be explained. This includes the explanation of the symbols, especially when they are used the first time. All this ensures their comprehensibility. All of the important formulas are numbered on the right side in parentheses ().

When writing formulas, especially with exponents and indices, pay attention to:

- a) large and small letters
- b) number "0" and the letter "O"  
number "1" and letter "l"
- c) "k" and "κ" (kappa),  
"n" and "η" (eta),  
"u" and "μ" (my),  
"v" and "ν" (ny).

### 3.4 Figures

3.4.1 Figures of any kind are to be numbered consecutively and be identified by a number:

3.4.2 Figures are, for the reader and for presentations, of great importance in engineering. The figures should therefore be designed with high quality. Numbers and letters in the figures must therefore always be legible. All numbers and letters of figures placed in a text must have at least the size of the letters of the text.

Figures with colored curves must be recognizable also on a black / white printout. The curves should be marked with a number or a symbol whose meaning is indicated in the legend. The sequence of curves in the figure must match the sequence of the symbols in the legend. That means, the upper curve in the figure is listed in the legend at the top. This makes it easier to identify the curves for readers and for the audience in presentations. Keep in mind that in your professional life you must make everything as easy to understand as possible for your bosses and for your clients.

The Arial typeface for figures should always be used. This font is also best seen particularly in figures during presentations.

### 3.5 Literature citation

The citation required for various publications are listed below.

#### Books:

Author's name, first name (s) and other abbreviated author: book title, volume or part, publisher's name, place of publication, edition, year of publication, page reference.

#### Journal articles:

All authors as above: Title of article. Short Title of journal, volume or year, issue or delivery, first and last pages of the essay.

#### Essays from compilations:

Author as above: Title of article. In: title of the compilation, band, or part, pages from ... to, name of the editor, publisher, year ... (continue as in books).

## **4 Submission of the thesis**

Two copies of the thesis with original sewn binding must be submitted to the examination office in time. An electronic form of the thesis must be submitted to the supervisors.

## **5 Presentation and defense of the thesis**

### **5.1 Time**

The thesis must be presented to the audience in a lecture with a maximum of 15 minutes. Exceeding the time is not allowed. The explanation of a figure or an image takes about 1 to 2 minutes. Plan therefore no more than 15 images. Practice your presentation aloud several times before students or an imaginary audience and measure the time.

### **5.2 Design of the pictures**

All numbers, letters, symbols, etc. must be in a slide still visible in the back row of a large lecture hall. Therefore, use large fonts in Arial. Information about design of figures have already been given. Verify before presentation in a seminar room or lecture hall if your figures are visible in the back row. Avoid using too narrow scales, unnecessary lines, frames, logos, etc. in order to make the images as large as possible. Check for sufficient contrast of the images (colors), the lecture room is not always completely darkened.

### **5.3 Structure of presentation**

Start the presentation with an interesting image that symbolizes the problem and creates attention in the listener. This image should ideally be an eye-catcher. The design of the initial pictures of the problem and motivation of the thesis requires a lot of creativity.

Avoid a slide with the outline of the presentation. That a presentation begins with an introduction, then contains a description of the results and will end with a summary is common knowledge and is only boring for the audience. Such a figure gives no new information and wastes time. The outline of the presentation must be a common theme through your talk. For example, give intermediate conclusions and explain the consequence for the next step.

End your talk with conclusions. Show the usage and application of your results and in which way they are useful in industrial practice.



**Appendix 1: Example Cover**

**Otto von Guericke University of Magdeburg**

**Faculty for Process and Systems Engineering**

**Institute of**

...

**Master Thesis**

from

First Name, Last Name

**Title**

Supervisors:

Title, First Name, Last Name

Date

**Appendix 2: Example task**

**Otto von Guericke University of Magdeburg**

**Faculty for Process and Systems Engineering**

**Institute of**

...

**Task of the Master Thesis**

**for Mr./Mrs. ..., Matr.-No.**

Topic

Setting of tasks

Supervisors:

Begin of the thesis:

Submission of the thesis:

Signature

Responsible University Reviewer

**Appendix 3:      Wording of the declaration****Declaration**

I hereby declare that I prepared the work submitted without inadmissible assistance and without the use of any aids others than those indicated. Fact or ideas taken from other sources, either directly or indirectly have been marked as such.

Further I have not made payments to third parties either directly or indirectly for any work connected with the contents of the submitted thesis.

The work has not so far submitted either in Germany or abroad in same or similar form as a Bachelor-/Master thesis and has also not yet been published as a whole.

(Place, Date)

(signature)