

# GUIDELINES for the written DISSERTATION

## for graduation to Dr.rer.nat. / PhD / Dr.Ing. in Faculty VI

(updated 31.10.2022)

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The **Dissertation** is the written thesis you submit at the end. Our examination rules allow for two types of dissertation: publication-based or monographic.

Frequently asked questions about this:

*What is the difference between a publication-based and a monographic dissertation?*

A publication-based dissertation contains at least two papers that have been accepted for publication in peer-reviewed journals. Note that we require that you are first author on both, as evidence for this being your own work. Cases of shared first-authorships have been rare so far. As of now, the doctorate committee has no general rule for this but decides on the basis of the required declarations of each authors' contributions whether the required level of independence is met.

*When do I have to decide whether I submit a publication-based or a monographic dissertation?*

Formally, you need to indicate your decision when you hand in your thesis and apply for opening the doctoral degree procedure. In practise, this decision is often made quite late. A common case is that people aim for a publication-based dissertation but run out of time in the end to complete the journal reviewing process.

*What are the consequences of a decision for publication-based vs. monographic dissertation?*

The decision whether to hand in a publication-based or a monographic dissertation is mainly between you and your primary supervisor. It will not appear on your final certificate. The most important formal consequence concerns your choice of assessors: For a publication-based dissertation, at least one of your assessors must be free of any conflicts of interest (e.g., they cannot be co-authors on your papers). For a monographic dissertation, we request at least one external (non-UOL) assessor. Also NOTE some specific points to observe in the layout of your dissertation which are detailed below.

## Guidelines for your dissertation: General (applies to all)

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### *Structure*

The dissertation must be written in either German or English (unless special exemption granted). As a rule of thumb, a dissertation covers between 100 and 200 pages, plus appendices (if any).

A **formal Title page** with specific information is **mandatory**. **Make sure to use the template provided on our website**. Also NOTE that the Title page differs between the initially submitted and finally published versions of your dissertation.

The dissertation should include, in this order:

- ✓ Summary
- ✓ Table of Contents
- ✓ Introduction
- ✓ Chapter(s) detailing the research work
- ✓ Discussion
- ✓ (single) Reference list (for monographic dissertation; additional ones for publication-based, see below)
- ✓ Signed statement that the thesis was written independently and that the resources used have been fully specified (§12(2))

Optional but common:

- ✓ Acknowledgements
- ✓ List of Symbols, List of Tables and Figures
- ✓ Appendices
- ✓ Scientific CV

## *Content*

**Summary:** must not exceed 3 pages (ideally shorter) and should be understandable on its own. It must be provided in **both English and German**, with identical content.

**Introduction:** should clarify why the work is of scientific interest to a reader who is not an expert on the thesis topic. The introduction should clearly and concisely define the research question and the aim of the research.

**Discussion** typically addresses

A short summary of the essential findings of the dissertation

Comparison of relevant own findings to those of other researchers

Critical discussion of the own findings, especially considering limitations and the generality of the findings

Conclusions

Implications for future research

Possible application of the research

**Reference List:** should only contain published peer-reviewed literature and should be listed in a consistent manner according to common conventions in scientific literature.

If internet sources are used, the URL and the date that this URL was accessed need to be specified. Published abstracts may also be listed. Personal communications, unpublished manuscripts, internal reports and the like should not be included in the reference list but may be referred to in the main text.

## *Formatting*

Consistent serial page numbering throughout the entire dissertation is mandatory. In addition, it is strongly recommended that

- ✓ standard fonts are used; e.g. Arial
- ✓ character size of the main text is between 10pts and 12pts, line spacing 1.0 - 1.5,
- ✓ page size is DIN A4, page margins are 2 cm all around (NOTE: dissertations submitted for a dual degree with Groningen may be A5, as required by Groningen university).

## Additional Guidelines that apply for a publication-based dissertation

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### Structure

The two or more peer-reviewed published papers that comprise the publication base of the thesis are included as individual research chapters.

- Each chapter's content must be identical to the published paper (see below re. formatting).
- **For each published paper**, the relevant thesis chapter must have a **title page** that states the full bibliographic reference of the paper and a **statement** that the chapter is identical in content.
- On the same page, a **statement about your own** and each author's **contribution** (e.g. xxx designed the experiments, xxx analyzed the experimental results, xxx developed the research question, etc.) must be included and **signed by the primary supervisor** (§10(3)).  
NOTE that these statements are of increased importance in cases of shared first authorship. Similar statements that may be required by the journal and may already be included in the published version are NOT sufficient.
- If the chapter re-used data generated in the context of earlier thesis work (e.g., your Master thesis), the fact and extent of it must also be declared here.

The dissertation may contain **additional, unpublished research chapters**. NOTE: We now request title pages with the same **signed statements also for chapters that are identical** to manuscripts in review or to manuscripts close to submission.

A publication-based thesis, out of necessity, has **separate reference lists** for each published paper. It is your decision how to organize the references from the remaining chapters: either listed together at the end, or separately for each chapter.

### Content

A publication-based dissertation contains, in addition to the Introduction and Discussion sections of each paper, **general Introduction and Discussion chapters**. Here, the applicant is required to explain comprehensively how the papers, and (if applicable) further research chapters of the thesis, are related (§10(3)). As a rule of thumb, "comprehensively" means at least 5000 words (in total for Introduction and Discussion). NOTE that since these chapters are definitely your own work (without co-authors), assessors often place increased importance on them.

It may happen that one or more chapters of your dissertation were unpublished manuscripts at the time of handing in your thesis and have been accepted for publication by the time your doctorate procedure is completed. In this case, the thesis version handed to the university library should still contain the unpublished manuscript, as this was the basis for assessing your dissertation. You may add a statement to the relevant chapter's title page that this chapter was since published after revision(s) and provide the bibliographic reference.

### Formatting

Published papers may be included in their original published form (reprint), with only serial dissertation page numbers added. However, it is strongly recommended to include an author-formatted version of your papers into the dissertation, in order to avoid the violation of copyright regulations you may have agreed to. Consult with your supervisor if in doubt.

## Additional Guidelines that apply for a monographic dissertation

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### Structure

A monographic dissertation always contains general Introduction and Discussion chapters. It is your decision how the remaining chapters of the thesis are structured exactly. For example, a classic layout includes two further, comprehensive Methods and Results chapters. But you could also decide for several research chapters, each of which is in itself structured like a scientific manuscript, with its own Introduction, Methods, Results and Discussion sections.

**If a thesis chapter is already published, or is identical to a manuscript** in review or to a manuscript very close to submission, the chapter must have a title page that states:

- In case of published papers: the full bibliographic reference and a **statement** that the chapter is identical in content.
- **Your own** and each author's **contribution** (e.g. xxx designed the experiments, xxx analyzed the experimental results, xxx developed the research question, etc.), **signed by the primary supervisor**.
- If the chapter re-used data generated in the context of earlier thesis work (e.g., your Master thesis), the fact and extent of it must also be declared here.

NOTE that these statements are primarily for the benefit of your thesis assessors who need to evaluate your unique contribution. Make these issues transparent for them.

### Content

The chapters together should provide a level of documentation that allows a reader to understand the content in full detail, to judge the merits of the content, and to reproduce the work. As a rule of thumb, Introduction and Discussion should together comprise at least 5000 words. It is useful to remember that for a monographic dissertation, your external thesis assessor faces a similar task as the reviewer of a manuscript submitted to a journal.

It may happen that one or more chapters of your dissertation were unpublished manuscripts at the time of handing in your thesis and have been accepted for publication by the time your doctorate procedure is completed. In this case, the thesis version handed to the university library for publication should still contain the unpublished manuscript, as this was the basis for assessing your dissertation. You may add a statement to the relevant chapter's title page that this chapter was since published after revision(s) and provide the bibliographic reference.

### Formatting

Figures and Tables should be integrated into the main text but should be clear and understandable on their own.

Tables and Figures should be numbered in serial order across the entire dissertation.

Captions should be provided above Tables and below Figures. All Tables and Figures must be referred to in the text.

Published papers may be included in their original published form (reprint), with only serial dissertation page numbers added. However, consider that your dissertation is also published via the university library. Very often using the journal publisher's reprint then violates copyright regulations that you agreed to. It is therefore strongly recommended to include an author-formatted version of your papers into the dissertation.