Norwegian University of Life Sciences
Faculty of Veterinary Medicine

Guide on the content and scope of the introductory chapter (*kappe*) of doctoral theses

Version 2

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Purpose of the guide

The thesis requirements are described in Section 10 of the Regulations for the Philosophiae Doctor (PhD) degree at the Norwegian University of Life Sciences.

A doctoral thesis that consists of several pieces of work must contain an introductory chapter that summarises and collates the research questions and conclusions presented in each of them and documents the coherence of the thesis. This introductory chapter is called a *kappe* in Norwegian. This guide describes recommendations (not requirements) regarding the content and scope of the introductory chapter in doctoral theses of this kind.

There is a template (drawn up by NMBU to suit all of NMBU's subject areas) that you can use when you begin to write your thesis. The template is of the right size for printing, 17 x 24 cm, and can be used throughout the writing process (writing, submission for evaluation, and printing). This guarantees that all text, figures and images are properly printed. Please note that the template has been developed to suit all of NMBU's subject areas and is intended as a guide in writing the introductory chapter, but that it is not mandatory to follow all of the recommendations. It is possible that the template contains sections that you will not include in your thesis. If that is the case, you can make manual changes to your file. If you want to change the order of the sections, that is also something you can do yourself.

For practical reasons, this guide is structured using the same order as NMBU's template. Take a look at theses that have been previously approved at the Faculty, and feel free to discuss with your supervisory team regarding the adaptation of the template to your thesis.

Reference is also made to NMBU's title page (English).

Contact information

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The function of the introductory chapter

The Regulations for the Philosophiae Doctor (PhD) degree at the Norwegian University of Life Sciences set out the thesis requirements in Section 10-1(3): *The thesis may consist of a monograph or a compilation of several pieces of work in the form of scholarly manuscripts and/or articles. If the thesis consists of several parts, the thesis must contain an introductory chapter ('kappe') which from an overall perspective, summarises and collates the research questions and conclusions presented in them. The PhD candidate must be the sole author of this introductory chapter.*

Although the PhD candidate must be the sole author of the introductory chapter, it is to be written under supervision. The introductory chapter is to be an independent academic text that supplements and elaborates on the articles rather than repeating and summarising them. Also, the different parts of the introductory chapter should not repeat each other.

The introductory chapter must:

- be a scientific text that demonstrates a high academic level
- demonstrate that the author's knowledge in the relevant areas is comprehensive and up-to-date
- demonstrate the author's maturity, including his/her ability to critically assess his/her own and other people's research
- show how each of the articles sheds light on the overarching issues and summarise the thesis' contribution to the research field
- give grounds for the choice of research question(s) and/or hypotheses
- include reflections on ethical aspects of the research
- demonstrate the authors methodological and theoretical knowledge and skills and include self-assessment of the research that is presented.

Figures, images and tables

It is recommended that author uses figures and tables where relevant. Please remember that the format of the thesis is smaller than A4, and that figures and tables must therefore be suitable for reproduction in a smaller size.

The content and scope of the introductory chapter (*kappe*)

The introductory chapter can be structured using the template below (see also the contents of the mandatory course VET420 Writing the PhD thesis).

Title page

Supervisors (list of supervisors)

Acknowledgements

Table of contents with the following elements:

Supervisors (page X1)
Acknowledgements (page X2)
1 Abbreviations and definitions
2 List of papers
3 Abstract
4 Norwegian abstract
5 Synopsis with the following elements (NMBU's template refers to 'Synopsis', but in practice, this refers to sections 5.1–5.6 below; Synopsis with the following elements):
    5.1 Introduction
    5.2 Materials and methods
    5.3 Results – summary of the articles
    5.4 Discussion
    5.5 Identified gaps for future study/ implications of the study
    5.6 Conclusions
6 List of references
7 Enclosed articles/Papers
8 Supplementary material (Appendices)

Title

The title of the thesis should be descriptive and cover the main aspects of the thesis, as well as contain key words from the thesis. The title must be precise but should not be excessively long. If necessary, a subtitle may be included.

Supervisors

A brief description of roles (main supervisor, co-supervisors).

Acknowledgements

Here, the author thanks those who have contributed to the work. It is up to the candidate to choose the style of this section. The content of the Acknowledgements section is not evaluated, and the candidate is

free to choose his/her own words. It is customary to thank the university, faculty, department, funding and project partners, supervisors, partners, colleagues and family and friends.

Table of contents

The table of contents provides an overview of the content of the introductory chapter. The candidate should not include more than three heading levels.

Abbreviations and definitions

The candidate produces an alphabetical list of abbreviations and definitions used in the thesis.

List of papers

The list of papers lists the articles that comprise the thesis. For each article, the list must show the full name of the author(s), the title of the article and its publications status (manuscript, submitted, accepted for publication, in press). If the article has been accepted for publication or is in press, information about the year, journal and other relevant information about the publication (such as doi, issue, page number) must also be included.

Abstract

The abstract should not exceed one page. The abstract presents the thesis' background, hypotheses, methods, main findings and conclusions.

Norwegian abstract

A Norwegian version of the abstract must also be included. If the candidate's first language is not Norwegian or English, an abstract in the candidate's first language can also be included.

Introduction

The introduction is intended to provide a historical and academic overview of the field. The candidate should demonstrate his/her knowledge of the research field in question. This includes references to other disciplines and fields of research that put the thesis into perspective. The overarching research question is presented, and the candidate identifies knowledge gaps in the field.

It can be challenging to limit the introduction, but it is important that the candidate strives to be structured and precise. The introduction should read as an independent text with a clear thread and a structure that provides the reader with enough information to understand the purpose of the research project and the results that were produced. The introduction should provide a logical transition to the section where aims and objectives are described in more detail.

The candidate presents the main objective of the thesis, as well as sub-goals, and/or describes the hypotheses that were tested. The aims, objectives and/or hypotheses presented in this section form the basis of the discussion and conclusions that follow. The aims can be presented in the form of hypotheses that are tested. Remember that the format has implications for how the rest of the thesis is structured.

Materials and methods

The candidate describes the study design and elaborates on the methods that were used. The opponents may find it difficult to see how the material used in the different articles is connected (or if the same material is used in more than one article). This is usually not clear from each individual article. If the same material is used in more than one article, in whole or in part, it is recommended that this be explained clearly or visualised by means of a table or figure.

For more methodologically oriented theses, this section can be made more extensive and combined with the 'Material and methodological considerations' section described under 'Discussion' below. In theses that do not focus on methodology, the natural place for the discussion of methods is as a minor part of the general discussion.

Ethical considerations and applications for approval from research ethics committees etc. should be mentioned here.

Results – Summary of the articles

The articles are summarised separately or collectively. If the results are presented together, the candidate can identify which article the results originate from by giving the article number in brackets in this manner: (Paper II). The summary should be a slightly more extensive text compared with the article abstracts and should describe the logical connection between the different works.

Discussion

Evaluation of the results in light of existing knowledge, goals or hypotheses and previous knowledge gaps

The discussion should focus on the main findings in the thesis and the thesis' contribution to the research field. It should provide a clear presentation and document how the different articles are connected and form a whole.

The discussion should provide a broader perspective on the candidate's work. The discussion must be linked to the title of the thesis and the aims/objectives and hypotheses that is described in the introduction. The degree to which the aims of the thesis were achieved should be discussed. The candidate should also explain how the new knowledge fills previous knowledge gaps in the research field.

Material and methodological considerations

The candidate describes the advantages and disadvantages of the methods where relevant, and the limitations of the material that was used. The candidate can also elaborate on methods that were not chosen and the reasons for not choosing them. Unforeseen problems that the candidate has encountered in the course of his/her doctoral research can also be presented here. For some topics, it will be important to include a discussion of internal and external validity in light of the methods. Ethical issues mentioned in the 'Materials and methods' section should also be discussed.

Future perspectives

Candidates are expected to be able to make suggestions regarding future research and how their research might be followed up.

Concluding remarks/conclusions

This section should provide a conclusion for each of the aims/objectives and sub-goals. Alternatively, the author must state whether the results supported the hypotheses or indicated that they should be rejected. It must be clearly shown how the results have contributed to new knowledge in the field.

References

The references used in the introductory chapter (*kappe*) are formatted in accordance with the traditions of the relevant discipline. It is strongly recommended that the reference format that is used is one where the in-text citations contain the name of the author and year of publication, and that the articles should be organised in alphabetical order in the list of references. Referencing styles with numbered references generate additional work for the opponents.

Papers including supplementary material

The articles included in the thesis must be enclosed in their entirety. A divider that clearly states the article number (Paper I, Paper II etc.) shall be placed before each article.

It is preferable for unpublished articles to be provided in a layout that makes them easy to read, meaning that the figures and photographs are in their natural places in the text. Such articles/manuscripts must have page numbers and/or numbered lines so that opponents can refer to them during the public defence of the thesis.

For published articles, the publisher's PDF version can be used if the work is already openly accessible online (Open Access or paid release, alternatively permission from the journal). . If permission has not been granted or the articles are not openly available, the post-print version (version after peer review, before the publisher's PDF) of the article must be used in the thesis. See NMBU's website for further information.

Supplementary material/Appendices

Supplementary material is included here if it is practical. If it is not possible or reasonable, information about how the supplementary material can be accessed should be provided.