Norwegian University of Life Sciences
Faculty of Biosciences

MASTER'S THESIS AT BIOVIT

A master's degree program at Norwegian University of Life Sciences concludes with a master's thesis of 30, 45, or 60 credits (ECTS).

The master's thesis marks the end of studies at NMBU. It is an independent scientific work where you document the independence, comprehension, reflection, maturity, and analytical abilities that you have obtained throughout your studies.

Read more about regulations, deadlines, and guidelines here:
https://www.nmbu.no/en/students/degree-thesis-nmbu

Finding a topic and supervisor

Start contemplating early on what you want to write about in your master's thesis. Preferably you should have decided on a topic in December or the spring of your first year in the master's program, depending on the scope and type of thesis you want (30, 45, or 60 credits, and whether it includes experiments, field work, or laboratory work). Master's thesis topics will be published on BIOVIT's web pages, and at the annual degree thesis day in the autumn parallel (October/November), where you also can discuss relevant topics with academic staff at BIOVIT and external partners.

Choice of thesis topic, main supervisor, and the execution of the thesis is the student's responsibility. The main supervisor must be employed in an academic position at NMBU or as an associate professor II or professor II at NMBU.

Important deadlines

- Send the master's thesis contract to studieveileder-biovit@nmbu.no well before the registration deadline of the semester you are submitting your thesis (February 1st/September 15th).
- Register for the correct course code in StudentWeb as soon as registration opens.
- Register for the examination in StudentWeb when you receive confirmation that you are registered for the Master's Thesis course (the contract is the basis for being registered).
- Submit the master's thesis by the deadline in the year you are submitting (normally May 15th/December 15th).

Scope and formal requirements

The master's thesis must consist of work equivalent to 750, 1125, or 1500 hours, depending on whether the thesis is 30, 45, or 60 credits. The thesis may be written in Norwegian, Swedish, Danish, or English (it is possible to apply to write in another language in special cases).

Front page

You must use the template for degree thesis at NMBU, which is linked to at the end of this document. The thesis title should be brief, but also descriptive. It is a good idea to include keywords in the title that make it easy to find the thesis later.

Content

Abstract

If the thesis is written in Norwegian, the abstract must also be provided in English. The abstract is a summary of the most important aspects of the thesis. It must give the reader enough information for them to be able to determine whether they want to read the rest of the thesis. Although the abstract is the first part of the thesis, it must be written after you are finished writing the rest of the thesis, because it is only then that you have an overview of the content and results.

Preface

Here the background and motivation for choice of topic is explained; when and where the work is done, who has provided assistance and support, who has been the supervisor(s), and other practical information that the reader should know.

Table of contents

Chapter overview and list of tables, figures, and appendix (always at the end of the table of contents).

Use main chapters and subchapters to show the structure of the thesis. Use short and descriptive headings! Use the decimal system to divide the chapters (maximum of three decimals).

Introduction

Here you briefly introduce the topic of the thesis. In the introduction you must argue why the topic is important. The background for the research question(s) and earlier works in the field should also be mentioned in the introduction.

In the background/earlier works section of the introduction, you should present earlier research in the field as a "current status of knowledge". If you need to include more on background/earlier works, you can either make a subchapter named «*Background*» or include this in the appendix.

Materials and methods
A description of the methods used in the master project. The description must include enough details that someone else could reproduce what you have done. Statistical analysis is also described in this section.

Results
Presentation of your own results and research. Results must not be discussed in this section, only presented. This section is not included in a literature review thesis.

Discussion
The discussion section must include analysis, assessment, and interpretation of results or literature findings related to the research question(s).

Results and discussion can be written independently or be combined. This depends on the topic and angle of the thesis.

The discussion section varies a lot depending on topic and methods. A scientific analysis raises questions that are analyzed and discussed from several different angles. A common weakness is that literature and theory are not discussed, that you get lost in the data, or that that the results are not sufficiently processed (tested, concentrated, systematized etc.). Results from others within the same field should be included for comparison with your own results, and for discussion purposes.

Conclusion
The conclusion wraps up the main text in the thesis. It should give answers to the defined research questions. A short summary of the most important findings/results in the thesis should be included.

The conclusion should be brief and give the reader specific information about new and interesting knowledge that the thesis has led to. The conclusions are drawn based on results and previous scientific work. It is common to assess the results of the work and elucidate demands in future research.

Literature
The reference system of the literature list must be Harvard style:
(https://www.nmbu.no/en/library/write-and-cite)

Remember that all references in the literature list must be used in the thesis text, and that all references in the thesis text must be in the literature list. The university library offers courses and training in correct referencing.

Here you must include all literature used in the thesis (written sources, oral sources, pictures, online sources, etc.).

The references must be complete, accurate, and consistent with Harvard citation style.

A way to learn correct referencing is to look at other scientific papers or master's theses.

Mendeley or EndNote are useful software for referencing. See more details in appendix 2.

Appendix

In the appendix you should include for example surveys or results from background analyses that don't fit in the thesis, but that are relevant to include as supplementary information. Any appendices must be numbered and listed in the table of contents.

Advice on presentation

Fonts and layout

The layout of the thesis must be as described below:

- Times New Roman, size 12, line spacing 1.5.
- Page numbering from page 2 (the front page is not numbered)
- Normal margins (2.5 cm on the left and on the right)
- The number of pages is to be discussed with the supervisor.
- Remember that Latin names are always written in cursive/italic font.
- Define concepts and technical terms the first time they are mentioned or make a separate section for these.
- Front- and back-page templates: https://design.nmbu.no/anvendelser/anvendelse/node/4952

Tables and figures

Tables and figures must be numbered, and they must be referenced, interpreted, and commented on in the text. Which tables and figures to include in the text depends on whether they provide more or better information than regular text can, the size, and if they are fundamental to the presentation. Carefully consider which tables and figures to include in the text and whether some should rather be included in the appendix.

Tables should have descriptive headings. It should be possible to interpret the table independent of the text. The same principles apply to figures, but the caption must be placed below the figure. Remember to credit people for pictures, tables, or figures (if they are created by someone else).

Language

The language in the thesis is crucial. Be brief, precise, and consistent in your wording. Avoid unnecessary use of foreign words, repetition, phrases, and emotional (for example indignant) language. Avoid pronouns as much as possible (words like one, I, me, we are only used when there is a need to reference people).
Set aside enough time to proofread the text. Be thorough. Remove unnecessary content and phrases, edit complicated sentences, consider the chapter names and sectioning, double-check literature references and page number references, figure captions and numbering, table headings and numbering etc. Insufficient proofreading can reduce the quality of the thesis substantially.

Links to resources

https://www.nmbu.no/en/students/degree-thesis-nmbu

How to write references

A. Books

1. Author(s)

2. Print year

3. Title (and any subtitles, series, and edition)

4. Publisher, place of publication

5. Page numbers

6. ISBN number

Example:

Hansen, O., Solem,T., Olsen, P. & Harstad, T. 1994. Plantelære. Landbruksforlaget, Oslo. 351 s. ISBN 82-529-1569-8.

B. Journal articles

1. Author(s)

2. Print year

3. Title of article in the journal

4. Title of the journal or series where the work is published (often written in cursive/italic)

5. Volume number, if necessary, with issue number in parentheses

6. Page numbers of the first and last page of the article

Examples:
Sageidet, B. 2005. Soil pollen analysis of a podsol and clearance cairn confirms Bronze Age Agricultural at Orstad. Journal of Nordic Archaeological Science. 15: 57-76.

Beckmann, M. & Krogstad, T. 2005. A phosphorus Index for Norway. Acta Agric Scand. 40: 205-213

Reference the source in the text as follows:

Sageidet (2005) or (Sageidet 2005) and Beckmann & Krogstad (2005) or (Beckman & Krogstad 2005). With multiple authors, use the name of the first author and et al. (Hansen et al. 1974) or Hansen et al. (1974). If you reference several works of the same author from the same year, use lowercase letters, for example 1980a, 1980b, and sort alphabetically by title of the articles.

How the examiner assesses a master's thesis:

The external examiner must assess whether the student shows comprehension, reflection, maturity, and analytical ability in their master's thesis. The thesis is a means of training in identifying research topics within a field in a study program and analyzing and processing these in a scientific way, as well as training in producing a written scientific work on the topic.

The content is described above, and the form below shows which parts are included in the examination (the weighting of the different parts is not equal) and what can be adjusting for the combined assessment/final grade.

Oral presentation

The oral presentation and discussion of the master's thesis (and any special syllabus) must take place within 6 weeks of the submission deadline (normally May 15th/December 15th). See regulation «Innlevering og sensurering» for more details.

The defense starts with a 20–30-minute presentation, where the student gives an overview of the thesis. After the presentation there is a discussion with the examiners. The whole defense can last 1-1.5 hours. The presentation along with the discussion can adjust the final grade of the thesis.

The external examiner and the internal examiner must be present during the presentation of the thesis. All supervisors should also be present. Others may also be present, as the defense is open to the public.

The purpose of the discussion is to give the candidate feedback on the thesis that is more detailed than the grade, as well as providing the examiner with more background for determining the final grade.

- The examiner provides a general assessment of the positive and negative aspects of the thesis.
- The examiner asks the student more specific questions about parts of the thesis to assess the student's judgment, comprehension, personal effort, and independence.
- The supervisor can provide supplementary comments. No separate grade is set for the discussion.

The discussion **can be used to adjust** the final grade of the thesis. It is the final grade that is presented to the candidate and that is shown on the transcript of records.

Link to grading system for master's thesis

https://www.nmbu.no/en/students/grading-system-and-assessment-criteria

Assessment of master's theses at BIOVIT

Student: Title:

Date of defense:

Main supervisor: Co-supervisor: Examiner:

Partial assessments	**Comments**
Abstract, Preface, Table of contents	
Introduction, Research questions, and goals	
Background	
Materials and methods	
Results description	
Discussion	
Conclusion	
Layout and referencing	
Written presentation and consistency	
May be adjusting:	
Assessment of oral defense and presentation	
Examiners impression of independence and initiative	
Work effort, practical execution of experimental work and laboratory work	
Final assessment	

All parts of the form are part of the assessment (the weighting of the different parts is not equal).

Grading system for Master's theses in MNT subjects

The grading of Master's theses in mathematics, natural sciences and technology is governed by the following descriptions of marks for students admitted to Master's programmes. Each description covers these areas: general comments; theoretical overview, insight and choice of methods; manner of completion - level, technical skills; depth, research and development; presentation.
https://www.nmbu.no/en/students/grading-system-and-assessment-criteria

A - Excellent
An exceptional thesis which clearly demonstrates a talent for research and/or originality, in a national perspective. The candidate has very good insight into the scientific theory and methods in his/her field and has demonstrated scientific knowledge at a very high level. The objectives of the thesis are well defined and easy to understand. The candidate is able to convincingly select and apply relevant scientific methods, has all the technical skills required for the work, can plan and conduct very advanced experiments or computations without help, and works very independently. The thesis is considered very comprehensive and/or innovative. The analysis and discussion have an extremely good scientific foundation and justification, and are clearly linked to the topic that is addressed. The candidate demonstrates extremely good critical reflection and distinguishes clearly between his/her contributions and the contributions from others. The form, structure and language in the thesis are at an extremely high level.

B – Very good
A very good thesis that is clearly outstanding. The candidate has very good scientific knowledge and insight into the scientific theory and methods in his/her field. The objectives of the thesis are well defined and easy to understand. The candidate is able to select and apply relevant scientific methods soundly, has almost all the technical skills required for the work, can plan and conduct advanced experiments or computations without help, and works very independently. The thesis is considered comprehensive and/or innovative. The analysis and discussion have a very good scientific foundation and justification, and are clearly linked to the topic that is addressed. The candidate demonstrates very good critical reflection and distinguishes clearly between his/her contributions and the contributions from others. The form, structure and language in the thesis are at a very high level.

C- Good
A good thesis. The candidate has good scientific knowledge and insight into the scientific theory and methods in his/her field. The objectives of the thesis are generally well defined, but may contain some inexact formulations. The candidate uses the relevant scientific methods satisfactorily, has most of the technical skills required for the work, can plan and conduct quite advanced experiments or computations without help, and works independently. The thesis is considered good with elements that are creative. The analysis and discussion have a good scientific foundation and justification, and are linked to the topic that is addressed. The candidate demonstrates good critical reflection and usually distinguishes clearly between

his/her contributions and the contributions from others. The form, structure and language in the thesis are at a good level.

D - Satisfactory

A satisfactory thesis. The candidate has quite good scientific knowledge and insight into the scientific theory and methods in his/her field. The objectives of the thesis are defined, but may contain some inexact formulations. The candidate is generally able to apply relevant scientific methods, has the main technical skills required for the work, and can plan and conduct experiments or computations without help. The candidate works independently to some extent, but needs quite close supervision to achieve satisfactory scientific progress. The candidate may have problems utilizing the research group's expertise in his/her own work. The thesis is considered satisfactory. The analysis and discussion have a satisfactory scientific foundation and justification and are linked to the topic that is addressed, but there is room for improvement. The candidate demonstrates his/her ability for critical reflection, but has problems distinguishing clearly between his/her contributions and the contributions from others. The form, structure and language in the thesis are at an acceptable level.

E - Sufficient

A thesis that is acceptable and satisfies the minimum criteria. The candidate has sufficient scientific knowledge and insight into the scientific theory and methods in his/her field. The objectives of the thesis are described, but are vague and imprecise. The candidate is able to apply some relevant scientific methods, has a minimum of technical skills required for the work, and can plan and conduct simple experiments or computations without help. The candidate achieves limited scientific progress without close supervision and has problems utilizing the research group's expertise in his/her own work. The thesis is considered limited and somewhat fragmented. The analysis and discussion have an adequate scientific foundation and justification, but ought to have had a better link to the topic that is discussed. The candidate demonstrates sufficient critical reflection, but may have problems distinguishing between his/her contributions and the contributions from others. The thesis is mostly acceptable, but has definite shortcomings with respect to form, structure and language.

F - Fail

A thesis that does not satisfy the minimum requirements. The candidate does not have sufficient scientific knowledge and insight into the scientific theory and methods in his/her field. The objectives of the thesis are not clearly defined or are lacking. The candidate demonstrates a lack of competence in the use of scientific methods, does not have the required technical skills and independence for the work, and has scarcely utilized the research group's expertise in his/her own work. The thesis is considered very limited and fragmented. The analysis and discussion do not have an adequate scientific foundation and justification and are loosely linked to the topic that is discussed. The candidate does not demonstrate sufficient critical reflection and does not clearly distinguish between his/her contributions and the contributions from others. The thesis has major shortcomings with respect to form, structure, and language.