

# Guidelines for Master's Thesis in Global Health

(Version 1.4, October 2018)

These guidelines are valid for students admitted to Global Health, in the academic year 2017/2018 or later.

More information about the master's thesis can be found on the following webpage:

<https://innsida.ntnu.no/wiki/-/wiki/English/Forms+and+Guidelines+for+the+Master+Thesis+at+the+Faculty+of+Medicine>

## 1. Objective of the Master's Thesis

The purpose of the master's thesis is to develop the students' scientific problem-focused approach and improve their ability to pursue lifelong learning. In their work on the thesis, the students will train in resolving problems independently, critical assessment of scientific literature and formulating clear research questions.

To acquire a scientific approach and work method, the students must learn to:

- Formulate a scientific research question
- Answer / test / examine the research question experimentally
- Process the results from such a study using adequate empirical methods
- Publish the results in a scientific report

To develop skills in using data and literature searches, the student must learn:

- Methods for searching original literature
- Use of scientific libraries/databases etc.

To develop sufficient levels of fluency in scientific writing and presentation, the student must learn:

- Precise and adequate ways of expression
- Use of support means to write a report.

## 2. Placement in the studies and scope of the Master's thesis

Planning of the thesis should commence as early as possible in the studies, and the Master's Degree Agreement, including a project description (see below), must be submitted no later than the 15<sup>th</sup> of March of the first year of studies. The advantage of early planning is that the education can be adapted so that topics that directly support the work on the thesis can be studied in more detail.

The thesis gives 60 credits and corresponds to one year of full-time work. It is difficult to stipulate a page count because a brief presentation may be no less demanding than a longer one. The thesis paper should improve the student's ability to be concise and succinct.

### 3. Preparations for the Master's thesis

The students are encouraged to choose a research topic relating to on-going research and research environments at NTNU, St. Olav's University Hospital or other relevant academic environments. Relevant topics will be made available in the first semester. The students must initiate contact with the research environment and supervisors of their choice.

The *principal supervisor* is the project leader of the master's thesis project. He / she must be employed by NTNU within the timeframe of the thesis, and must have competence on the doctoral degree level or other documented scientific competence. A student may also have a *subject supervisor*. In cases where the subject supervisor is employed by another institution than NTNU, the student must cover any travel costs between the institutions. An external supervisor cannot assume that she or he will be paid for the supervision.

The Master's Degree Agreement, signed by both the student and the principal supervisor, including a project description, must be submitted to the Department of Public Health and General Practice for approval at the latest on the 15<sup>th</sup> of March of the first academic year.

The project description must include:

- The preliminary title of the thesis
- The rationale for choosing the research question (with references to relevant works)
- Methodology
- Reference list
- Any ethical issues the research raises
- Appendix:
  - Progress plan
  - Budget (stipulated costs for expenses)

The number of pages of the project description should be kept low, and must meet the criteria for the REK application.

The faculty will provide feedback in writing as to whether the agreement, project description and supervisor have been approved. If the project description is *not* approved, the student will get a written explanation with recommendations for improvements, and a new deadline for submission of a revised (or new) project description.

### 4. Supervision of the Master's Thesis

Each thesis is entitled to supervision corresponding to a total of 60 supervisor hours (including preparations). When planning the framework for working on the thesis, it is important that the student consider delays of a practical nature, for example a supervisor's absence. A student may not demand more supervision time than the maximum time for supervision even if she or he works on the thesis more than one year.

We point out that the supervisor and the student must agree on the scope of the work and that the student shall receive assistance in realistically estimating the time required for completion. From an educational point of view, the *process* is the most important factor, i.e. the student must participate as much as possible in the planning, implementation and presentation of a research project.

In the event that one of the parties does not satisfy his/her obligations in a satisfactory manner and in accordance with the descriptions in this document, or should the relation between the supervisor and the student become difficult, the person in question may use this as grounds for requesting to be released from the Master's Degree Agreement. The student may then contact the Section of Student and Academic Affairs at the Faculty of Medicine, and request that a new supervisor is being appointed.

## **5. Form and Content of the Master's Thesis**

The aim of the thesis is that the student should demonstrate insight into a scientific problem oriented approach and all the phases of the scientific work process. This includes formulating the research question, searching in literature, structuring, collecting any data, analysis, and presentation and critical assessment of the work. Therefore, great importance is attached to having the student proceed through all these phases when working on the thesis. To keep the focus on the scientific approach and work process, the thesis should be given a form and a language that reflect what is used in scientific articles dealing with the same topic and methodology.

The thesis may be written as a report or may have the format and the length of a scientific publication with an average length comparable to what is considered standard for the particular field of study. In the latter case the introduction and discussion can be extended to provide a more extensive summary of relevant literature. The master's thesis must be written in English with a word processor.

### Updates 15.2.2017:

The master thesis should hold 30 – 50 pages, including tables and figures, but without references. Spacing 1,5 or 2, Times New Roman size 12, and as reference style you can for instance use Vancouver style, but the important thing is to choose one reference style and be consistent throughout the thesis.

## **6. Tips and Advice about the Master's Thesis**

The following is intended as assistance in the work with the protocol and the master's thesis in accordance with the logic of a scientific presentation.

*Abstract (optional, but recommended):* a short summary of introduction, purpose/aim, methodology (design), results, discussions, conclusions and relevance.

You should also make a list of the abbreviations used in the thesis.

*Introduction:* Presentation of the issue or phenomenon the thesis intends to examine, the context where the issue has arisen or the phenomenon is found, and references to previous research with particular emphasis on whether current knowledge is lacking or contradictory.

*Common shortcomings:* *The issue is imprecisely defined or formulated incorrectly; references to previous research are incomplete.*

*Purpose and aim:* The rationale for the thesis, i.e. what one intends to achieve by increasing knowledge on the issue or phenomenon.

*Common shortcomings: The purpose is not mentioned, not linked to previous research in the field or does not agree with what the work discusses.*

Questions and hypotheses: Research questions that require answers to satisfy the purpose of the thesis; hypotheses that are made on the basis of valid theories in the field or hypotheses in the form of innovative guesswork one wishes to test.

*Common shortcomings: Absent or flawed research questions; not a good relation between the questions provided; poorly formulated hypotheses; questions that cannot be answered.*

Methodology: Choosing an adequate method, materials and practical implementation based on the purpose of the study, its research questions and hypotheses.

*Common shortcomings: Choosing a method that is inappropriate; (patient) sample that is not representative of the population one wishes to study.*

Results/findings: Answers to the questions asked using the collected data.

*Common shortcomings: Lack of logical relation between the results presented and the question or hypotheses provided; confusion between results and discussion; presentation of more data than what is relevant to illuminate the issue.*

Discussion: Brief summary of the most important results/findings; whether or not they support the hypothesis or hypotheses. Critique of the methodology applied and the reliability and relevance of the results/findings; comparison with other research findings.

*Common shortcomings: Conclusions that cannot be supported by the findings, such as guesswork without any basis in the study data; introduction of new questions and subsequent discussion of these.*

Conclusion: Consequences of findings in relation to the formulated purpose, such as consequences for further research, development of new theories or practical application.

*Common shortcomings: Conclusions not warranted by the findings or building on other data than what stems from the study; conclusion shows no connection to the purpose/aim.*

## **7. Ethics**

All master thesis projects must be conducted in terms of national and international principles (National ethical committees, the Helsinki declaration), the law, and internal guidelines at NTNU. Health research ethics is regulated by the Health Research Act (2008, no. 44), and such research must be organized and carried out in a responsible manner. Research must be based on respect for the research participants' human rights and dignity. The participants' welfare and integrity shall have priority over scientific and social interests. Medical and health research must take into account ethical, medical, health, scientific and privacy factors.

Research ethical questions must be described in the project protocol. The student's

main supervisor (project leader) is responsible for all relevant applications, and that all necessary approvals have been given before the project starts. All applications must be approved before the data collection can start (REK, NSD etc.). When the Faculty of Medicine has approved the student's Master's Thesis Agreement and project description, an application for prior approval must be submitted to REK. This is done by the principal supervisor. REK undertakes a standard evaluation of the research ethics of the project and decides whether the project satisfies the requirements laid down in the Health Research Act. REK may specify conditions for approval. More information about REK can be found on the following webpage:  
[https://helseforskning.etikkom.no/?\\_ikbLanguageCode=us](https://helseforskning.etikkom.no/?_ikbLanguageCode=us)

Special requirements may be present depending of where the data collection is taking place, and what kind of data that is being collected. This is particularly relevant in cooperative projects with external institutions in other countries. If the master thesis project involves already collected data, it may be necessary with a new ethical applications/registrations.

Student access to and management of confidential information must be in line with the applied laws and guidelines. All person identifiable data must be investigated, treated and presented anonymously. The study program leader are responsible for that the Department's routines for storage of data material is in line with current requirements, both after the project is completed, and if the projects is interrupted.

The Head of the Department is responsible for the research in the master thesis project. If more than one department is involved in the project, it is the main supervisor'd Head of department who is responsible. If the project is conducted in a clinical setting, the person responsible for the research at this clinic/institution must be presented in the project protocol.

Responsibilities in health research is further described at "Innsida":

<https://innsida.ntnu.no/wiki/-/wiki/Norsk/Ansvar+og+plikter+i+helseforskning>

You can also read more about personal information here:

<https://innsida.ntnu.no/wiki/-/wiki/Norsk/Behandle+personopplysninger+i+student-+og+forskningsprosjekt>

### *Animal Studies*

All animal studies should comply with local, national, and international regulations in line with the requirements laid out by Forsøksdyrvalget (<http://www.mattilsynet.no/fdu/>).

Students are responsible to comply with those regulations and can only work with animals independently when they have been licensed by the local responsible veterinarian to do so. If not, students can only work with animals under continuous supervision of a licensed NTNU employee.

All work on animals is confidential, no pictures can be taken without permission of the supervisor and no material can be moved outside the premises of NTNU/the lab without permission. Non-licensed persons are not allowed to enter animal facilities without being accompanied by a licensed NTNU employee.

The student's supervisor is responsible to assure that all experiments have been approved through an application to Forsøksdyrvalget before the project is initiated.

## 8. Submission and Assessment of the Master's Thesis

The master thesis must be submitted in a PDF-format in Inpera Assessment. In addition, the students have to submit the forms:

[Registration for Final Master's Degree Examination](#)

[Agreement on Lending, Usage and Electronic Publication of Thesis](#)

The master thesis is registered as submitted when the PDF-file is submitted in Inpera Assessment, and the two forms are sent to the Department ([ragnhild.lier@ntnu.no](mailto:ragnhild.lier@ntnu.no) AND [postmottak@mh.ntnu.no](mailto:postmottak@mh.ntnu.no)). The student must have passed all compulsory and elective courses in the master's programme (60 credits in total) before submitting the thesis. The student must register for the examination in PH3901 on StudentWeb the same semester as the Master Thesis is submitted in accordance with date limits gives by NTNU.

### *Submission deadline*

The nominal length of study for the master's programme is four semesters, calculated from the semester in which the student was granted admission to the master's programme. The deadline for submission of the master's thesis is 1 June of the fourth semester. If the student submits the master's thesis after the nominal deadline, the thesis will be awarded the grade F – fail.

### *Leave and extension of submission deadline*

In case of disease, childbirth or compulsory military service, it is possible to apply for leave. The submission deadline will then be extended according to the length of the leave. Application for leave must be sent to the Department ([ragnhild.lier@ntnu.no](mailto:ragnhild.lier@ntnu.no)).

For other compelling reasons, such as problems with data collection or shorter illness periods, the student is able to apply for 3 months extension of submission deadline. The application must be submitted as soon as possible, and no later than two weeks prior to the original submission deadline. If the student is not able to submit within the new submission deadline, it is possible to apply for another three months of extension. It is not possible to apply more than two times, and not for more than three months at a time.

In addition to the assessment of the written master's thesis, there will also be an oral examination ("final master's degree examination"). The oral examination takes place within three months after submission of the thesis, and has two parts:

1. Open lecture: The candidate spends 20-30 minutes presenting his/her work. This part of the examination is open for any interested parties, but no questions may be asked to the candidate.
2. Open examination: The examiners examine the candidate for up to 40 minutes.

In determining the grade, the examiners are to undertake an overall assessment of the student's work/performance. The grade descriptions are available on the following website:

<https://innsida.ntnu.no/wiki/-/wiki/English/Description+of+grades+for+master+thesis>

Symbol	Level	Description
A	<i>Excellent</i>	<ul style="list-style-type: none"><li>• <i>Excellent work which is outstanding.</i></li><li>• <i>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.</i></li><li>• <i>The candidate is able to select and apply relevant scientific methods convincingly, has all the technical skills required for the work, can plan and conduct advanced experiments or computations and works very independently in cooperation with a supervisor.</i></li></ul>

		<ul style="list-style-type: none"> <li>• <i>The thesis is very thorough and contains new knowledge and is an innovative contribution. The analysis and discussion have an extremely good scientific foundation and justification and are clearly relevant 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.</i></li> <li>• <i>The form, structure and language in the thesis are at an extremely high level.</i></li> </ul>
B	Very good	<ul style="list-style-type: none"> <li>• <i>Very good work that is clearly distinguishable.</i></li> <li>• <i>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.</i></li> <li>• <i>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 experiments or computations very well and works independently in cooperation with a supervisor.</i></li> <li>• <i>The thesis is thorough and contains some new knowledge and some innovative contributions. The analysis and discussion have a very good scientific foundation and justification and are clearly relevant 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.</i></li> <li>• <i>The form, structure and language in the thesis are at a very high level.</i></li> </ul>
C	Good	<ul style="list-style-type: none"> <li>• <i>A good piece of work.</i></li> <li>• <i>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 unclear formulations.</i></li> <li>• <i>The candidate uses the relevant scientific methods satisfactorily, has most of the technical skills required for the work, can plan and conduct experiments or computations well.</i></li> <li>• <i>The thesis is considered good with elements that are creative. The analysis and discussion have a good scientific foundation and justification and are relevant 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.</i></li> <li>• <i>The form, structure and language in the thesis are at a good level.</i></li> </ul>
D	Satisfactory	<ul style="list-style-type: none"> <li>• <i>A clearly acceptable piece of work.</i></li> <li>• <i>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 contain some inexact formulations.</i></li> <li>• <i>The candidate is generally able to apply relevant scientific methods, has</i></li> </ul>



		<p><i>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.</i></p> <ul style="list-style-type: none"> <li>• <i>The thesis is considered satisfactory. The analysis and discussion have a satisfactory scientific foundation and justification, and are relevant to the topic that is addressed, but there is room for improvement. The candidate demonstrates his/her ability for critical reflection, but has problems</i></li> <li>• <i>distinguishing clearly between his/her contributions and the contributions from others.</i></li> <li>• <i>The form, structure and language in the thesis are at an acceptable level.</i></li> </ul>
E	Sufficient	<ul style="list-style-type: none"> <li>• <i>A piece of work that is acceptable and satisfies the minimum criteria.</i></li> <li>• <i>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.</i></li> <li>• <i>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 experiments or computations generally without help but achieves limited scientific progress unless there is close supervision.</i></li> <li>• <i>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 relevance to the topic that is addressed. The candidate demonstrates sufficient critical reflection, but has problems distinguishing between his/her contributions and the contributions from others.</i></li> <li>• <i>The thesis is generally acceptable, but has definite shortcomings with respect to form, structure and language.</i></li> </ul>
F	Fail	<ul style="list-style-type: none"> <li>• <i>A piece of work that does not satisfy the minimum requirements.</i></li> <li>• <i>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 unclearly defined or lacking.</i></li> <li>• <i>The candidate demonstrates a lack of competence in the use of scientific methods, does not have the required technical skills and achieves very limited scientific progress, even with close supervision.</i></li> <li>• <i>The thesis is considered very limited and fragmented. The analysis and discussion do not have an adequate scientific foundation and justification, and are only partly relevant to the topic that is addressed. The candidate does not demonstrate the necessary critical reflection, and does not distinguish between his/her contributions and the contributions from others.</i></li> <li>• <i>The thesis has major shortcomings with respect to form, structure, and language.</i></li> </ul>

At least two examiners are required, whereof at least one must have no formal ties to NTNU (external examiner) (cf. Chapter 6 section 37 no. 2 of the Regulations relating to studies at NTNU, and section 50 no. 2 of the Act relating to Universities and Colleges). The determination of the grade is to be a decision involving shared responsibility in which the assessments of both the examiners are weighted according to the standardised assessment form, which is to be submitted together with the signed censor form. The examiners determine a provisional grade for the Master's Thesis before the oral examination. The provisional grade is determined on the basis of the supervisor's account as well as the descriptions of grades for the Master's Thesis (see below). The final grade shall be available immediately after the oral examination has been held. The student is informed only of the final grade.

#### *Criteria for assessment of the Master's Thesis*

When assessing the master's thesis decisive importance shall be attached to the following quality criteria:

1. A precise and thoroughly considered formulation of the research issue based on a general introduction to the field with clear specifications of the questions and/or hypotheses that will be illuminated
2. A systematic collection of relevant literature including whether current knowledge is lacking or contradictory
3. A systematic collection of own observations / data, if relevant
4. A clear and structured presentation of the material
5. A clear critical discussion of the material with a presentation of appropriate conclusions
6. A brief and succinct presentation in accordance with the norm for scientific articles within the topic and methodological area of the master's thesis. The title and the grade of the thesis will be referenced on the examination diploma, but no other details of the assessment will be provided on this document.

#### *Explanation of the grade awarded*

<https://innsida.ntnu.no/web/guest/wiki/-/wiki/English/Explanation+of+grades+and+appeals>

The student may request a written explanation of the grade awarded. The request for an explanation must be submitted to the faculty within one week after the oral examination, using a web form (see link above).

The explanation should cover the following aspects:

1. Was the master's thesis completed within a reasonable period?
2. To what extent is the master's thesis creative and excellent?
3. To what extent does the candidate show theoretical understanding of the subject area?
4. To what extent is the candidate capable of discussing his or her contribution in relation to the development of the subject and the latest research?
5. Has the student himself/herself generated important problem formulations and methods for solution and used these in a relevant way in the thesis?
6. Is the presentation precise and well-structured?
7. If possible and relevant, assess the potential for further research.

### *Appeal of the assessment*

Students can make an appeal of the assessment within three weeks after the oral examination, using a web form (see link above) For students who have requested an explanation of the grade awarded, the three weeks deadline will be running from the time they receive the explanation. Two new examiners, which should not have any information about the initial grade, the explanation for it or the basis for the student's appeal, will be appointed. The new examiners will assess the written thesis. A new oral examination will be held only if the new grade is different from the initial grade.

### **9. Funding**

For expenses which are directly related to the master thesis project, such as travel and accommodation during data collection (not meals), the student can ask the department of the principal supervisor for reimbursement for up to 20 000 NOK. All planned expenses must be described in the project protocol.

### **10. Publication of the Master's Thesis**

If the manuscript is submitted to a scientific journal for consideration for publication, this must be done in cooperation between the student and the supervisor. The rights to any data collected during the work with the Master's Thesis belong to NTNU. Published articles should be issued by the supervisor's Department and must comply with the general rules for authorship (such as the ICMJE rules: [www.icmje.org](http://www.icmje.org)).