

Instructions for Thesis Assessment Boards

Master's Programme Geo-information Science and Earth Observation

Valid from the academic year 2022

1. The MSc Research exam is requested by the student when the MSc Supervisor deems the thesis is 'ready for defence'. A student can decide to request the defence even though the MSc supervisor foresees a risk of failure.
2. The MSc Research exam must be performed in accordance with the Faculty ITC Education and Examination Regulations for the Master's programme Geo-information Science and Earth Observation and the Rules and Regulations of the Examination Board. In case of a Joint Education Programme, the participating institutes may have agreed upon new procedures which may take precedence over these instructions.
3. The Thesis Assessment Board (TAB) is appointed by the Examination Board and is accountable, via the Programme Director, to the Examination Board. The results of the MSc Research exam are submitted, via the ITC Student Assessment tool (ISA), to the Examination Board.
4. **The objectives of the MSc Research** are, that the student must be able to:
 - Address a well-formulated relevant research problem of sufficient scope and depth related to the application of geo-information and earth observation and linked to relevant literature (scientific scope and depth)
 - Undertake research with a clear and transparent methodology with proper use of concepts, methods and techniques (scientific method)
 - Write a well-structured and readable thesis report with a clear layout (reporting)
 - Orally present and defend the research and use proper argumentation in the discussion about the research (presentation and defence)
 - Work in a structured and independent way, while making adequate use of the guidance of the supervisor (process)
 - Reflect and discuss in the thesis, the relevance of the research in different cultural and international contexts, OR, present the research in an international setup, through reflecting on its utility in overarching cultural and societal differences and fostering of stakeholder partnerships (scientific scope and depth).
5. **The MSc Research exam protocol** is outlined in Annex 1.
6. Criteria to assess if a student has achieved the objectives, are given in the **MSc research exam rubric** (annex 2) and in ISA. This rubric, as part of these assessment instructions, is used to assess all students in the current academic year.
7. The TAB is expected to assess the MSc Research on the basis of these criteria only. Mitigating circumstances should not be taken into account while determining the mark. The assessment is absolute. Each student is assessed on his/her individual performance; not related to the average performance of the other students in the programme.
8. At least three members of the TAB must be present at the MSc Research exam, including at least one supervisor. In case these conditions cannot be met, the Examination Board is immediately consulted and the Chair, in agreement with the student, decide whether the exam can continue or should be postponed. In case the chair of the TAB (the ITC professor or associate professor) cannot attend, the Examination Board will appoint another ITC (associate) professor as a replacement.
9. Only **the final outcome** of the MSc Research exam will be communicated to the student by the chair of the Thesis Assessment Board. Opinions of individual TAB members are never communicated.

ANNEX 1 MSc RESEARCH EXAM PROTOCOL

Prior to the MSc Research exam

1. The members of the Thesis Assessment Board (TAB) each review and assess the written Thesis prior to the exam. At least three TAB members submit their preliminary mark and comments for the Thesis digitally to the TAB chair, before the exam, using the online 'Preliminary MSc Research Report Assessment' form: isa.itc.utwente.nl. For each category mentioned on this form (see also annex 2 for details), the TAB members each provide arguments with their assessments.

! In case fewer than three preliminary assessments have been submitted, the Chair must decide if the exam can still take place. The Chair can request the Education Support Office to override ISA and allow the final assessment to be submitted with incomplete preliminary assessments.
2. At least five working days before the exam, the first supervisor certifies that:
 - a. The thesis has been analysed by plagiarism detection software and that the **document is authentic**.
 - b. Potential **ethical concerns** have been properly addressed in the thesis and/or its annexes.
 - c. The **data management plan** provides sufficient guidance, insight and metadata to aid the reproducibility of the research.

In case any of these elements cannot be certified, the first supervisor informs the TAB chair and the MSc Research coordinator immediately.
3. If the first supervisor deems that ethical concerns or the data management plan have not been properly addressed in the thesis, the student is given an additional assignment to address these issues, that must be submitted as an addendum to the thesis before the start of the exam.
4. In case fraud is determined, the TAB chair informs the Programme Manager and the Examination Board. The MSc exam will not take place and no mark will be given for the exam. The Examination Board determines whether the thesis can be resubmitted under the conditions stated with the second opportunity of the MSc Research Exam.
5. In cases where a TAB member is of the opinion that the Thesis is clearly indefensible (i.e., a Fail mark is inevitable); this should be communicated, **at least 24 hours before the exam**, to the TAB chair and the MSc research coordinator for further action (which may include that the student does not defend the Thesis).

The MSc Research exam

1. The Thesis defence part of the MSc Research exam is public and will be announced as such. If circumstances dictate, the TAB chair can, after consultation with the student decide to close the defence to the public.
2. During the exam, a procedural adviser is present to advise on this protocol.
3. The duration of the exam is approximately 45 minutes including a short (maximum 10 minutes) presentation by the student.
4. The chair ensures that, after the presentation, all members of the TAB get a chance to ask their questions, ending with questions from the supervisor(s). The questioning of the student by the TAB lasts for about 30 minutes.
5. When the TAB is satisfied with the answers to their questions, the Thesis Assessment Board retreats for a discussion of the mark.

Assignment of the mark of the MSc Research exam

1. Weights are given for the various rubric categories to determine the final mark of the MSc Research exam. The contents of the Thesis itself, i.e. scientific scope and depth and scientific method and Reporting are the most important criteria categories. This is reflected in the weights assigned to these rubric categories. A 'fail' in any of these three categories would, therefore, constitute a fail of the exam.
2. Marks given for individual rubric categories should be assigned in half or whole marks. The final mark for the MSc Research exam must also be **rounded to half or whole marks**

3. In asking for the opinion of the TAB members on the final mark, the opinion of the chair is brought in last.
4. The TAB members are expected to reach agreement on the final mark for the MSc Research exam on the basis of the average marks for the rubric categories and personal argumentation. If this does not lead to agreement, the chair weighs the arguments and decides. If different marks are given for similar argumentations, the chair can align these marks.
5. The chair will record the results of the exam in ISA, including a summary of the argumentation to justify the final mark. Upon submission by the chair, the completed forms are shared with the Examination Board and the student.
6. As soon as the TAB has come to a conclusion about the mark the chair, in the presence of the TAB only, verbally communicates the mark of the MSc Research exam and the corresponding argumentation to the student.
7. **On no account** should the TAB or any of its members individually, give any indication to the student of:
 - opinions of individual TAB members about the assessed thesis,
 - the final qualification for the Master's programme as a whole.

The MSc Research re-exam

1. In case the student receives a Fail mark for the first MSc Research Exam opportunity, a second opportunity can be organized.
2. The protocol for the MSc Research re-exam (i.e. the second opportunity of the exam) is equivalent to the protocol for the first exam opportunity. However:
 - a. **in the re-exam only the required major revisions to the thesis** – i.e. the list of required points of improvement that the student has received as part of the re-sit letter –**are assessed**. Therefore, the re-exam is a 'repair option' and a maximum grade of 6.0 can be given. The elements of the MSc research exam that have been passed during the first exam opportunity – including the oral presentation – are not assessed again as part of the re-exam.
 - b. The chair of the Thesis Assessment Board decides whether or not to include an oral presentation (e.g. of the changes made in the thesis) part of the re-exam.

ANNEX 2: MSc RESEARCH EXAM RUBRIC (M-GEO)

Category Mark	Scientific scope and depth	Scientific method	Reporting	Presentation and defence	Process
	50%		20%		30%
	<i>To pass the exam, a Fail in any of these three categories is not allowed</i>				
Fail There are serious shortcomings Evidenced by the following:	<ul style="list-style-type: none"> - No advancement of insight how the scientific problem under study works. - No clear link with the relevant research field. - justification of the research topic was too superficial - Unable to place the research in a wider context. 	<ul style="list-style-type: none"> - The methods applied are not appropriate to address the scientific problem under study. - There are serious errors and quality concerns in the data collection process and/or the data used. - There are serious errors and inconsistencies in the analysis techniques. 	<ul style="list-style-type: none"> - The thesis is incomplete. - The thesis does not comply with an acceptable structure. - The writing style does not allow comprehension of research intents and outcomes. - There is incorrect use of references. - Not all research questions are discussed and concluded. 	<ul style="list-style-type: none"> - Poor presentation (unreadable visual materials, poorly articulated or poorly timed presentation). - Is unable to answer questions satisfactorily. - Is unable to explain and justify the research and research outcomes. - Shows insufficient understanding of the scientific problem under study. 	<ul style="list-style-type: none"> - Lacked initiative and relied excessively on input from the supervisors. - Did not respond to suggestions from supervisors. - Did not meet deadlines nor agreements. - Did not inform supervisors about problems in a timely or complete manner. - Was incapable of handling set-backs
6 Sufficient Evidenced by the following:	<ul style="list-style-type: none"> - Sufficient introduction and justification of the research topic is made, but rather superficial (e.g. limited literature review). - Results were interpreted, but only to a limited extent. - There was advancement in insight in the scientific problem under study to some extent. - Limited critical attitude - Limited ability to reflect on the wider scope of application of the research 	<ul style="list-style-type: none"> - Has chosen possible techniques and data, but these were not necessarily the best. - Has sufficiently explained and justified choices for techniques, data and assumptions. - Has achieved, with difficulties, to independently apply standard methods in an appropriate manner. 	<ul style="list-style-type: none"> - The document is sufficiently organised with headings and captions. - Visual representations of results are sufficiently explained or discussed. - There is sufficient use and handling of references. - English grammar and spelling are sufficient. 	<ul style="list-style-type: none"> - Shows sufficient understanding of the scientific problem under study. - Methods, results and conclusions are sufficiently explained and justified, but only at a basic level. - Responses to questions in the discussion are sufficient. - Is sufficiently "on-top" of the subject but cannot go more in-depth or answer questions when these are addressing a wider or multi-cultural scope. 	<ul style="list-style-type: none"> - Asked for advice, also without first exploring solutions. - There was sufficient follow up on advice from supervisors. - Was sufficiently able to meet deadlines or agreements. - Could sufficiently deal with setbacks, but only with help from the supervisor.
7 More than sufficient Evidenced by the following:	<ul style="list-style-type: none"> - More than sufficiently demonstrated insight in the scientific problem under study. - Can explain and justify the research and interpret most of the results within the context of the discipline. - Can independently analyse the research results. - The student showed sufficient critical attitude towards the results - The student is able to reflect on the wider scope of application of the research. 	<ul style="list-style-type: none"> - The choices to use particular data and techniques are logical - The basis for assumptions made in relation to choices for data and analysis techniques and assumptions, is justified. - Methods are mostly correctly applied. - Showed sufficient critical attitude towards the methods used 	<ul style="list-style-type: none"> - Well readable text (grammar and spelling). - Visual presentations of results are relevant and more than sufficiently explained and referred to in the text. - The citations and references are completely in accordance with academic requirements. - Graphics are informative 	<ul style="list-style-type: none"> - Can more than sufficiently explain and justify the research and its outcomes in a presentation. - Responses to questions in the discussion are more than sufficient. - Is sufficiently "on-top" of the subject and, to some extent, can go more in-depth or answer questions when these are addressing a wider or multi-cultural scope than that applied in the research. 	<ul style="list-style-type: none"> - Took initiative. - Before asking for advice, tried to solve a problem. - Met most deadlines and followed up agreements. - Was able to contribute to discussions about the research during meetings. - Was able to handle most setbacks independently. - Independently analysed and interpreted the results more than sufficiently.

Category Mark	Scientific scope and depth	Scientific method	Reporting	Presentation and defence	Process
<p>8</p> <p>Good</p> <p>Evidenced by the following:</p>	<ul style="list-style-type: none"> - Demonstrated insight in the scientific problem under study. - Can independently analyse and interpret the research results. - Has critically discussed the results - Can explain and justify the research and interpret the results within a wider context of the discipline - Is able to critically reflect on the wider scope of application of the research. 	<ul style="list-style-type: none"> - The choices to use particular methods and data are well justified and logical. - Methods are well explained and correctly applied. - There is creativity in the application of methods and/or data analysis. - Provides a good critical discussion of the methods used. 	<ul style="list-style-type: none"> - Well readable text (grammar and spelling). - The report is complete and complies with a good and self-explanatory structure. - Visual presentations of results are relevant and properly explained and referred to in the text. - Graphics are informative and increase understanding of results. 	<ul style="list-style-type: none"> - Good presentation (excellent visual materials, articulated presentation, kept within time). - Is able to give good answers to all questions and can engage in meaningful discussion with the assessment board. - The student appears to be “on-top” of the research and is able to give in-depth answers and relate to a wider or multi-cultural scope of application 	<ul style="list-style-type: none"> - Took initiative. - Knew when to ask for help. - Before asking for advice, independently tried several ways to solve a problem. - The student met all deadlines and followed up agreements. - The student was able to contribute to lively discussions about the project during meetings. - The student was capable of handling setbacks independently. - The student independently analysed and interpreted the results very well.
<p>9 – 10</p> <p>Very Good or Excellent</p> <p>Evidenced by the following:</p>	<ul style="list-style-type: none"> - Demonstrated novelty, which brings the relevant research field a step further in terms of knowledge, methods or application. - Explains the research very well and shows excellent understanding of the scientific problem under study. - Evaluates the results within the research field and is able to identify advantages and limitations. - Is able to critically reflect on the wider scope of application of the research. 	<ul style="list-style-type: none"> - The choices to use particular data and techniques are optimal and logical. - Clear justification of choices for data, techniques and assumptions. - Methods are correctly and independently applied. - Provides an excellent critical discussion of the methods used - There is clear evidence that the student is able to design new techniques or can combine existing techniques in a novel way. 	<ul style="list-style-type: none"> - The thesis is very well-structured - Negligible or no grammar or spelling mistakes. - The citations and references are completely in accordance with academic requirements - The thesis is suited to be converted into a peer reviewed scientific paper or book chapter without major effort. 	<ul style="list-style-type: none"> - The presentation of the research is very well designed and structured, appropriately timed and very clear. - The student shows in-depth understanding of the scientific problem under study. - The student responds accurately and correctly to questions. - The discussion goes beyond the immediate research outcomes and also focuses on the wider or multi-cultural implications of the research findings. 	<ul style="list-style-type: none"> - The student solved most problems independently, before asking advice. - Knew when to ask for help. - The student set most deadlines and agreements and followed these. - The student was able to lead lively discussions about the research during meetings. - The student was capable of handling set-backs independently in novel and creative ways.

