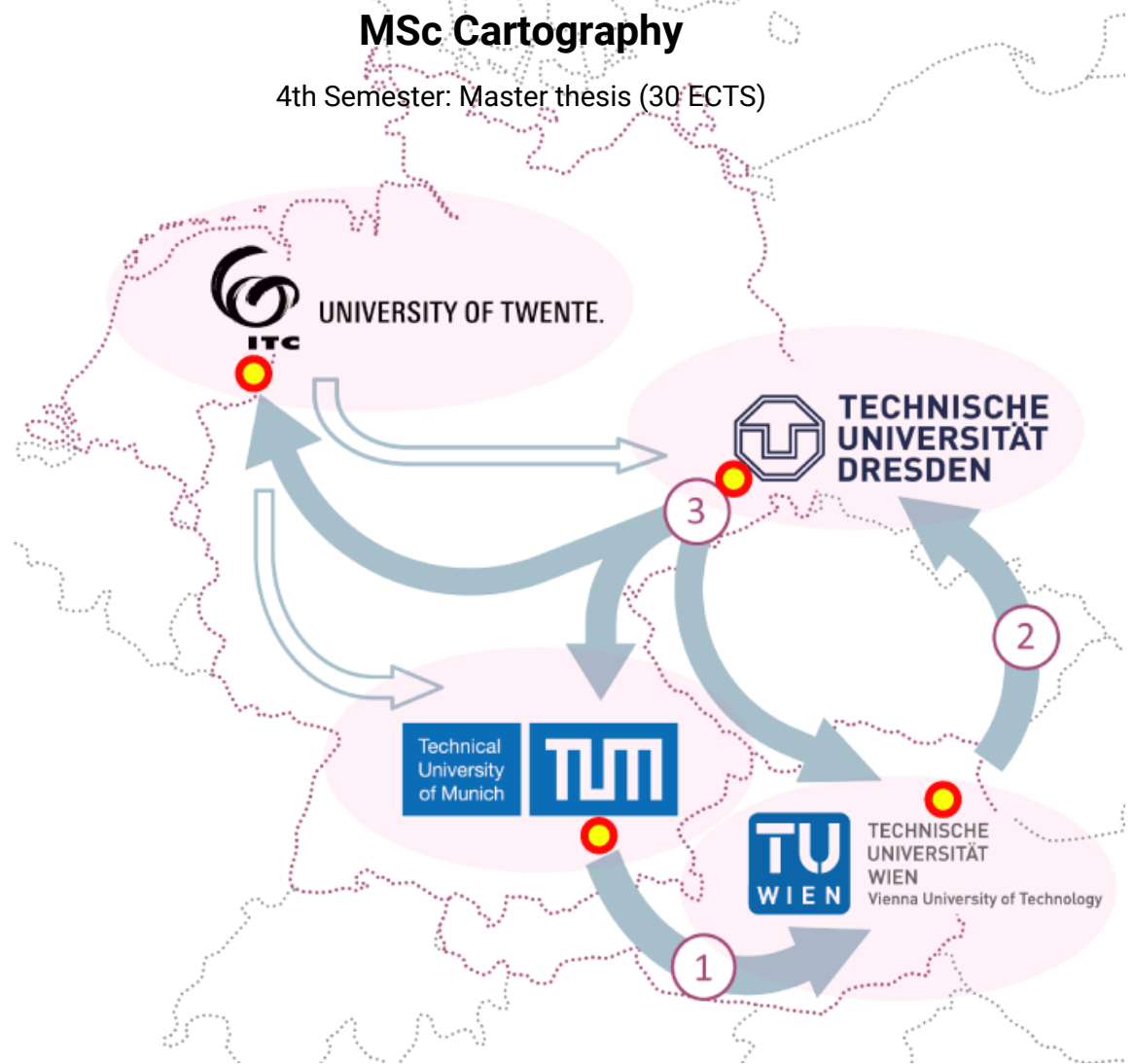


Thesis Research PROCEDURAL HANDBOOK for students

MSc Cartography

4th Semester: Master thesis (30 ECTS)







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VERSION HISTORY

v1 – February 2023: initial version.

v2 – September 2024: updated for Joined Degree

v3 – November 2024: updated for 24-25 thesis



INTRODUCTION

We have created this handbook to help **STUDENTS** that are writing their Master Thesis for the Cartography MSc. We tried to provide a structured overview of the timeline and procedures throughout the thesis semester. If you have additional questions or remarks on this document, do not hesitate to contact the current **THESIS COORDINATOR**.

Note that this handbook is focussed on the **procedures** of the thesis process, not the academic aspects of the thesis research. It reflects, *but does not take the place of*, official documents such as Exam Regulations and the Module Handbook. Note also that the staff involved (supervisors, reviewers and chairs) will receive similar information.

The procedures are based on **starting points**, or basic principles, that are derived from the Consortium Agreement: All parts of the thesis research (writing, presenting, and discussing) will be in English. The University of Twente (Faculty ITC) is responsible for the quality, coordination, organisation, and execution of the 4th Semester. Because we are now a Joint Degree with uniform regulations, procedures, and quality assurance mechanisms, we have created a **joined procedure**, combining the regulations at the partner universities.

The current regulations, procedures and quality assurance mechanisms have been accepted by the partner universities. Changes can only be made with the agreement of all 4 partner universities.

ROLES

In this handbook we refer to people involved in the thesis research semester by their **ROLE**.

The **STUDENT** executes the research, writes the thesis, and presents & defends it to the **THESIS ASSESSMENT BOARD (TAB)**. The **TAB** consists of at least three members:

- The **CHAIR** is an academic staff member (full/associate/assistant professor) at the partner university where the student concerned writes their thesis. The chair must have a PhD and is ultimately responsible for the quality of the thesis research. For this reason, it is normally the professor/chair of the cartography research group of the partner university. But for practical reasons (absence, being first supervisor) they *can* be replaced by another academic staff member.
- The **FIRST SUPERVISOR** of a student is employed by the same partner university as the chair and usually (but not necessarily) the staff member that proposed the topic. Further **SUPERVISORS** from (associate) partners, research institutes or industry *can* be assigned. The first supervisor is the official academic responsible and is the principle point of contact for the chair and thesis coordinator. Supervisors are not required to have a PhD.
- Every student will also be assigned a **REVIEWER** from one of the partner universities other than the university that employs the first supervisor. The **REVIEWER** is *not another supervisor* but will only be involved in the assessment stages and acts as a less directly involved, independent reviewer of the quality of the work. Reviewers are not required to have a PhD.



The thesis semester and the thesis research process are administered and coordinated by the **THESIS COORDINATOR**. They advise the student in topic choice and development, procedural matters and organise presentations and defences (in cooperation with the local coordinators at the partners). The thesis coordinator works closely with the **PROGRAMME SECRETARY**. This person is responsible for the administration and finances of the programme and acts also as the secretary of the Steering Committee and the Examination Board.

At some stages of the research, the thesis coordinator will seek the consent or advise of the **STEERING COMMITTEE**.

In case of disputes, appeals, extensions, etcetera, a decision or advise of the **EXAMINATION BOARD** can be sought.

TIMELINE

Students must be stimulated as much as possible to complete their thesis research within one semester, normally their 4th (the Summer Semester of their second year). One important argument is that the Erasmus scholarship payments stop at the end of the 4th semester. Meeting research deadlines is also an important learning objective and supervision will be more efficient. Most students will follow the general deadline of choosing topics at the end of their 3rd semester and doing the thesis work during their 4th Semester. They will thus follow this general timeline:

GENERAL DATES	EVENT
December	Thesis topics published on website.
1 January	Deadline topic selection by students.
Halfway January	Approval of thesis topics and first supervisors (and thus location for thesis writing).
<i>In between</i>	Students start work on Extended Research Proposal (ERP), in contact with their supervisors. Reviewers and chairs are assigned.
1 April	Official start of semester 4.
Halfway April	Deadline for ERP submission
End of April	ERP defences & assessment
Around 1 July	Midterm presentations
Begin September	Deadline for submitting final thesis
End September	Thesis defences & assessment

The actual timing for the running cohort can always be found on the website at <https://kartoweb.itc.nl/msc-carto-thesis/timing.html>

However, based on various circumstances (delayed start, health situation, etcetera) students can follow other timelines. In such cases, the **EXAMINATION BOARD** will provide a letter that clearly states the deadline for thesis submission (and possibly other deadlines), based on a 6-month period from the thesis research starting date. Note that the *maximum* duration of the whole MSc Cartography programme is 6 Semesters.

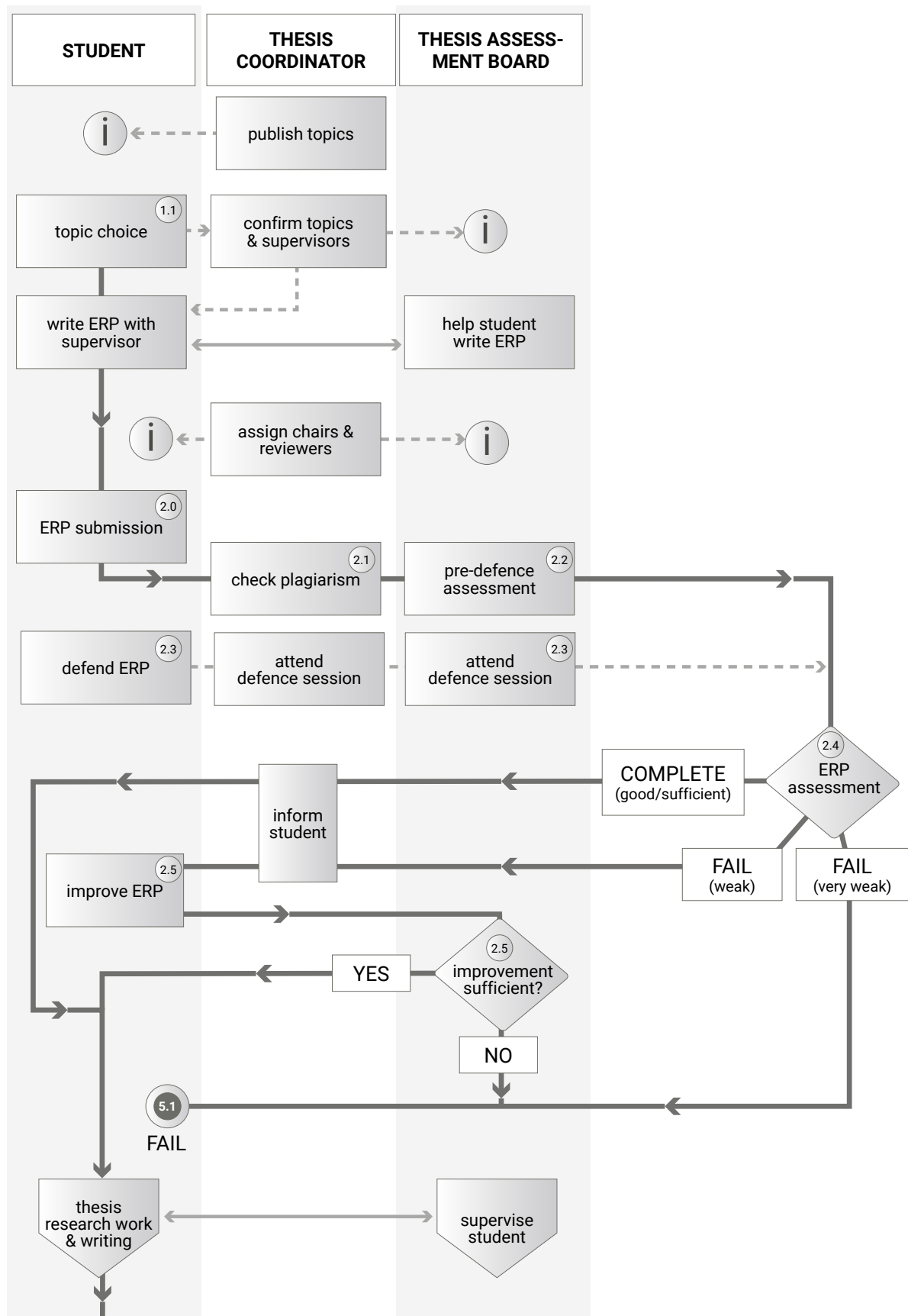
If the student and/or supervisors estimate at *any point in the process* that the thesis work **cannot** be finished in the scheduled time, there are procedures to deal with that, see Delays & Extensions.

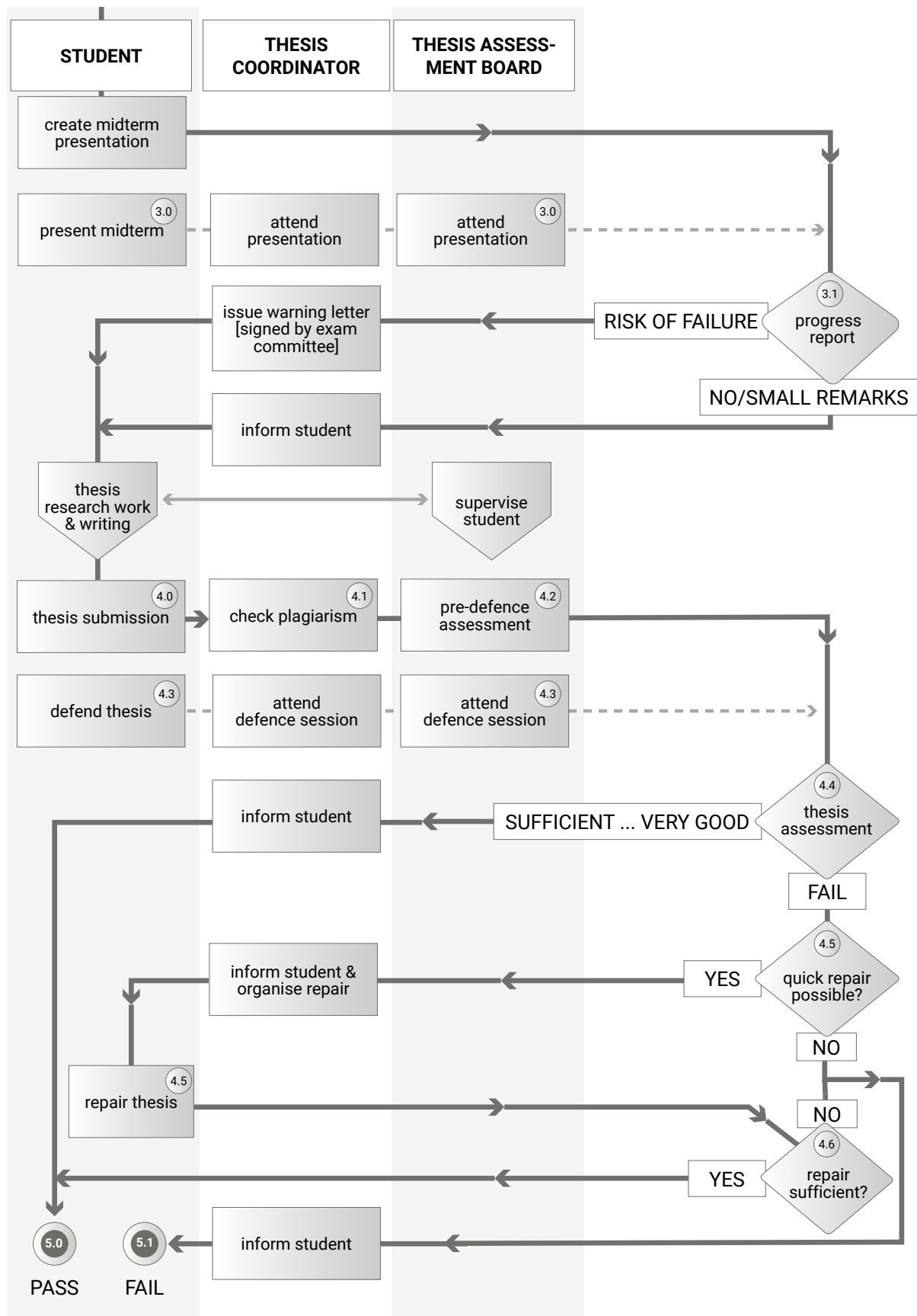


FLOWCHART



On the next pages you'll find a detailed flowchart of all stages. More details about the stages and the various assessments follow in the sections below. **STUDENT**, **SUPERVISOR**, **REVIEWER** and **CHAIR** tasks are highlighted in the flowchart and in this text, linked by numbered symbols (see example in the left margin).







THESIS TOPIC CHOICE

1.0

Research topics can be proposed by all members of the consortium and their associate partners. We also encourage the students to propose topics themselves (there are workshops about this and consultations with the thesis coordinator and staff of the partner universities). The thesis coordinator will, with the support of the local coordinators, collect topics from the staff and publish them on a dedicated website (see appendix A: Topic Choice)

Most students are free to choose any topic, but note that students with German or Austrian citizenship, that are also receiving an Erasmus Mundus scholarship, *must* choose a topic that will let them write their thesis at UT, to fulfil the EM scholarship requirement of having at least two “mobilities”.

1.1

On or before the deadline, the **STUDENT** sends a form to the thesis coordinator (appendix A: Topic Choice). The **THESIS COORDINATOR** compiles these into a proposed topic list, based on their preferences. The final topic list is defined by the **STEERING COMMITTEE**. The Thesis Coordinator notifies all students of their topic and **SUPERVISOR** (and thus the partner university where they write their thesis) and reminds them about enrolment and payment procedures for the thesis semester.

The thesis coordinator publishes the topics & supervisors list and seeks reviewers (with the help of the local coordinators). Potential **REVIEWERS** can express interest for the various topics. The **THESIS COORDINATOR** compiles the interests into a *proposed reviewers* list. The final reviewer assignment is done by the **STEERING COMMITTEE**.

EXTENDED RESEARCH PROPOSAL (ERP)

STUDENTS draw up an Extended Research Proposal (ERP) in consultation with their **SUPERVISOR**. It is advised that students will already start as soon as their topic is determined, so before the end of their 3rd Semester.

The objective of the ERP is that the students show they are able to write a coherent MSc thesis research proposal and present and defend this. It should show that they can:

- Define ways to tackle a scientific problem and structure research
- Place their research project in a wider scientific and societal context
- Structure their proposed scientific research to the specifications of the scientific discipline
- Meet quality standards in research practice (e.g., using proper referencing, reasoning, etc.)
- Present scientific information in written English at a standard acceptable to the scientific community

The main purpose of the assessment of the ERP is to establish whether the planned MSc research is of the standard required, so that the proposal forms a solid starting-point for the execution of the thesis research (from an academic point of view).

2.0

On or before the deadline, the **STUDENT** submits the ERP to the thesis coordinator and the TAB. The ERP should be a logical and ordered exposition of the envisaged research, including data availability, research questions, planned methodology to answer those, and a time planning. A template will be made available to the students (see appendix B: Extended Research Proposal).



2.1

The **THESIS COORDINATOR** will perform a plagiarism indicator check on all the proposals that have been submitted. In case of possible plagiarism (when the software used for this gives a score of > 10% likelihood), the **SUPERVISORS** will be consulted to give a final judgement. If they conclude there has been serious plagiarism, the Examination Board will be informed and the candidate will not be admitted to the proposal defence, and thus not to the further research in this semester (see *procedural fail* in the section Final result: Fail below for the follow-up). In less serious cases, the student will be allowed to repair the shortcomings.

2.2

The **TAB** will be asked to provide their feedback on, and assessment of, the student's work through a **pre-assessment form** (see appendix B: Extended Research Proposal), to be sent to the chair **before the defence**.

2.3

The **STUDENT** will present and defend their ERP in a half hour session. The sessions are either fully online or hybrid. There will be 10 minutes reserved for the presentation and 15 for questions and answers. This part is *public*: open for all students, staff, and other interested persons.

After the student's defence, the TAB will, in a separate (digital) room, use the remaining time (minimum 5 minutes) to discuss the assessment, based on the assessment form (see appendix B: Extended Research Proposal). The student is admitted to the *private* TAB room, and the **CHAIR** concisely conveys the outcome. After the session the assessment form is finalised and signed by the **CHAIR** and forwarded to the **THESIS COORDINATOR**, who will archive the form and send a copy to the student.

The ERP assessment form will be a brief summary, and thus may not contain all details of feedback and suggestions for improvement provided (as given on the pre-defence assessment forms). The **SUPERVISORS** are supposed to communicate that full feedback, including that of the reviewers, to their students, in their first meeting after the defence.

No numerical mark will be given for the ERP, only the following indication:

2.4

- **Complete:** either **Complete–Good** (no specific changes needed), or **Complete–Sufficient** (with some suggestions and recommendations for improvement). The student can go ahead with the thesis research.

2.5

- **Fail–Weak:** In this case the proposal is rejected, but the TAB estimates that necessary improvements to the proposal can be made in a reasonably short time (circa 2 working weeks). The **SUPERVISOR** communicates to the student (with cc to the thesis coordinator) a concise list of improvements needed, and a due date. The **STUDENT** is given the opportunity to undertake these improvements. The **SUPERVISOR** will assess if the requested improvements have been sufficient and in time, and if so, signs the amended assessment form and returns it to the thesis coordinator. The student can go ahead with the thesis research. If the improvements are not made in time, or assessed as insufficient, the assessment changes to "Fail–Very Weak", see below.
- **Fail–Very Weak:** In this case the proposal is rejected, and the student will not be allowed to continue with the thesis research (see *Procedural Fail* in the section Final result: Fail below for the follow-up).

After a successful ERP defence, the **STUDENT** continues the thesis research and writing under the guidance of the **SUPERVISOR(S)**. They decide between them on the modus of the supervision (such as frequency of meetings, types of contact, etcetera).



MIDTERM PRESENTATION

Roughly midway the thesis period (i.e., around 1 July in a regular 4th Semester) the **THESIS COORDINATOR**, in consultation with the local coordinators, organises the midterm presentations.

The **STUDENT** creates a short presentation about their progress: the parts of the research that have been done, plans for the remaining parts, problems encountered, and changes made. The contents of the presentation should be set in consultation with the supervisor(s).

3.0

The **STUDENT** will present their midterm in a half hour session. The sessions are either fully online or hybrid. There will be 10 minutes reserved for the presentation and 15 for questions and answers. This part is *public*: open for all students, staff, and other interested persons.

After the student's presentation and defence, the TAB will, in a separate (digital) room, use the remaining time (minimum 5 minutes) to complete a final feedback form (see appendix C: Mid-term Presentation). The student is admitted to the *private* TAB room, and the **CHAIR** concisely conveys the outcomes. After the session the feedback form is signed by the **CHAIR** and forwarded to the **THESIS COORDINATOR**, who will archive the form.

3.1

The form contains *formative feedback* (no grades). If there are **no, or small remarks** only, the **THESIS COORDINATOR** sends the feedback to the **STUDENT**, to be discussed with their supervisor. Only in case the TAB has concluded there is a serious **risk of failure**, or other cases for serious concern, the **EXAMINATION BOARD** sends the student a written warning explaining the concerns.

THESIS SUBMISSION

After the midterm, under the guidance of the **SUPERVISOR(S)**, the **STUDENT** continues the thesis research. In writing the actual thesis, the student should use the thesis writing rules (such as format to use, referencing system, etcetera) of the University where they write. The general rules and specific information per university can be found in appendix D: Submission. The rules vary: Some universities demand a specific layout, others provide only optional or no templates. But do note that "on top" of that all MSc Carto theses use the same Thesis Cover Page (including statement of authorship).

4.0

The **STUDENT** must finish the work and submit the thesis by the deadline communicated to them (normally the first week of September). If they cannot meet the deadline, there are procedures in place, see Delays & Extensions.

The **STUDENT** must submit:

1. *to their TAB (with cc to the thesis coordinator)*: the written thesis as a PDF (by email, making sure it is not larger than 20 Mb);
2. *to their first supervisor*: all relevant data (initial data, derived data, project files, scripts etc.) used for the research [check how this works best – DVD/cloudshare or other means];



3. *to the thesis coordinator*: a poster (as PDF) about the master thesis research. They should use the provided template;
4. *to the first supervisor*: their thesis presentation (as PDF);

Items 1-2 must be received by the thesis submission deadline, items 3 and 4 by the time of the defense session.

THESIS DEFENCE (MSC RESEARCH EXAM)

4.1

The **THESIS COORDINATOR** will perform a plagiarism indicator check on all the theses that have been submitted. In case of possible plagiarism (when the software used for this gives a score of > 10% likeliness), the **SUPERVISORS** will be consulted to give a final judgement. If they conclude there has been serious plagiarism, the Examination Board will be informed, and the candidate will not be admitted to the thesis defence (see *procedural fail* in the section Final result: Fail below for the follow-up). In less serious cases, the student can be allowed to repair the shortcomings.

4.2

The **TAB** will be asked to provide their feedback on, and assessment of, the student's work through a **pre-assessment form** (see appendix E: Thesis Defence), to be sent to the chair **before the defence**.

4.3

The **STUDENT** will present and defend their thesis in a 60-minute session. This session, which is the official MSc Research Exam, is either fully online or hybrid. At least two members of the TAB must be (virtually) present at the MSc Research exam (the **CHAIR** and one of the **SUPERVISORS**). In case the local chair is the first supervisor of the candidate, the **THESIS COORDINATOR** can appoint another person for chairing the session.

There will be 20 minutes reserved for the presentation, then a maximum of 30 minutes for discussion. This part is *public*: open for all students, staff, and other interested persons.

After this, the **TAB** will, in a *private* (digital) room, use the remaining time (minimum 10 minutes) to discuss the assessment and determine the grade. This will be based on the thesis assessment criteria reflected in the document in appendix E: Thesis Defence.

The student is then admitted to the *private* TAB room, and the **CHAIR** concisely conveys the outcome. After the session, the **CHAIR** finishes and signs the final assessment form to record the results of the exam as well as a short summary of the argumentation. This is forwarded to the **THESIS COORDINATOR**, who will archive the results and send copies to the student and the programme secretary.

4.4

The outcome of the MSc Research Exam is a numerical grade, expressed in the joined degree's marking system (see below). The grade can also be expressed as a definition/term and ultimately represents either a **FAIL** or a **PASS**.

4.5

Conditional Pass (quick repair): A fail is normally definitive because the academic quality of the work and/or writing is not sufficient, and improvement is not a trivial task. However, in some limited cases the assessment of the TAB can be that the work is on the border of being sufficient, and a quick repair of some limited aspects would make it just sufficient to be assessed as a PASS. This should *only* be used when there are certain shortcomings that are not fundamentally



academic, but rather writing errors, inconsistencies, or technical flaws. Examples could be inconsistent numbering of sections, illegible figures, missing references, misformed citations, etcetera. If reparation of these flaws would push the mark just over the PASS border, a Conditional Pass can be issued. Note that insufficiencies of academic nature (errors in methodology or reasoning, lack of evidence for conclusions, etcetera) cannot be reasons for a Conditional Pass (and ideally should have been noted earlier in the thesis process). *The decision to grant a Conditional Pass is at the discretion of the TAB.*

4.6

In case of a Conditional Pass the **STUDENT** is given the opportunity to repair the shortcomings, listed clearly in the assessment form, with a clear deadline. The **CHAIR** assesses if requested repairs have been implemented sufficiently and in time. In that case, the mark awarded can *only* be the lowest **Pass-Sufficient** mark (4.0). In other cases, the outcome will be a **Fail**.

FINAL RESULT: PASS (SUFFICIENT ... VERY GOOD)

5.0

The final result is a PASS, if the mark achieved is one of:

- **Pass-Sufficient:** 4.0 or 3.7
- **Pass-Satisfactory:** 3.3, 3.0 or 2.7
- **Pass-Good:** 2.3, 2.0 or 1.7
- **Pass-Very good:** 1.3 or 1.0

After a final PASS result, the assessment form is forwarded to the **THESIS COORDINATOR**, who will archive the results and send copies to the student and the programme secretary. The **PRO-GRAMME SECRETARY** will record all grades using the TUM marking system in the TUMonline system.

If the thesis was the student's last course (no results open for other courses), then the **PRO-GRAMME SECRETARY** starts the administrative graduation procedure. A pre-certificate for the student will be ordered at the TUM administration and sent to the student.

FINAL RESULT: FAIL

The final result is a FAIL, if the student is given a:

5.1

- **Fail mark:** 5.0
- **Procedural Fail:** this is the case if the student's thesis has not been assessed, for example because they received a "Fail-Very Weak" assessment in the ERP, committed plagiarism, failed to submit a thesis, or for any other reasons did not finish the thesis research. Note that in this case there will be *no official mark* administered, but the follow-up is the same as an assessed fail mark.

After a final FAIL result, the thesis semester is ended for the student, and they do not get any credits awarded. At the student's request, the **EXAMINATION BOARD** can give permission to start a new Thesis Research (as long as the student does not exceed the maximum duration of 6 semesters for the whole MSc Cartography programme). They will start again with a *new thesis topic* choice.



DELAYS & EXTENSIONS

At *any point* during the Thesis Research process, if the student and/or supervisor(s) estimate that the thesis work cannot be finished with the required quality in the scheduled time, or for other reasons the timeline needs to deviate from the standard, an extension can be requested. This can be for the whole thesis period, extending the research beyond the regular 6 months. It also can be for any individual part of the research process, e.g., if the student wants to delay the Midterm Presentation, but still expects to finalise the thesis within the regular time. It is the responsibility of the **STUDENT** to write an extension request to the Examination Board. Extension can be requested for a multitude of reasons, both academic and personal. An extension request should include all necessary facts and data (supervisor opinion, doctor's statement, etc.) and should also make a reasoned argumentation for the nature and length of the extension. The **EXAMINATION BOARD** will seek advice from supervisor(s) and others involved and will decide on nature and length of the extension awarded. An extension can be a:

- **Thesis Extension** for a fixed period (such as 4 weeks). In this case the **EXAMINATION BOARD** will provide a letter that states the new deadline for thesis submission (and possibly other deadlines). The maximum thesis extension duration is 2 months.
- **Thesis Pause**. In this case the **EXAMINATION BOARD** will provide a letter that states the thesis work is halted, and a date when it is supposed to start up again. It also will inform the student how much time will be remaining after the restart date to finalise the process (including necessary submission deadlines).



DIGITAL APPENDICES

APPENDIX A: TOPIC CHOICE

The thesis topic website:

<https://kartoweb.itc.nl/msc-carto-thesis/topics/>

The form students must send in stating their topic preferences:

https://kartoweb.itc.nl/msc-carto-thesis/files/Topic_Choice_Form.dotx

APPENDIX B: EXTENDED RESEARCH PROPOSAL

The templates for the ERP [includes a MS Word and a LaTeX version]:

<https://kartoweb.itc.nl/msc-carto-thesis/files/erp/ExtendedResearchProposalTemplates.zip>

The final assessment form for the ERP:

https://kartoweb.itc.nl/msc-carto-thesis/files/erp/ERP_Final_Assessment_Form.pdf

APPENDIX C: MIDTERM PRESENTATION

The feedback form for the midterm:

https://kartoweb.itc.nl/msc-carto-thesis/files/midterm/Midterm_Feedback.zip

APPENDIX D: SUBMISSION

Thesis, presentation and poster templates and common cover page:

<https://kartoweb.itc.nl/msc-carto-thesis/files/thesis/MScCartoThesisTemplates.zip>

APPENDIX E: THESIS DEFENCE

Defence information and criteria for students:

https://kartoweb.itc.nl/msc-carto-thesis/files/thesis/Defence_criteria_students_jan24.pdf