

Proposal for reorganisation of MSc theses at master's programmes associated to the D and IT programmes at Chalmers (draft)

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1 Introduction

This document outlines a proposal for the reorganisation of the procedures surrounding MSc theses at master's programmes associated to the D and IT programmes at Chalmers University of Technology. The main goal of the reorganisation is to improve the quality of the theses.

This proposal is based on an earlier proposal by Christer Carlsson, and has been produced in collaboration with Wolfgang Ahrendt, Peter Damaschke, Thommy Eriksson, Morten Fjeld, Graham Kemp, Agneta Nilsson, Elad Schiller, Jan Skansholm, Miroslaw Staron, and Olof Torgersson.

2 Main changes

This section describes and motivates the main changes to the procedures.

There is a perceived need to improve the quality of MSc theses produced at the department. To address this, two main changes are suggested:

- Every master's programme has a small number of MSc thesis examiners—perhaps only one. With a small number of examiners per programme an examiner can get a decent overview over the produced theses and their quality.
- Before students start work on a thesis they have to write a short proposal, which needs to be approved by the relevant master's programme coordinator(s). These proposals can only be handed in at set dates, once per study period (unless an exemption from this rule is warranted). The idea is that the coordinators should be more strict than before when approving proposals, so that projects that are likely to lead to poor results are filtered out early. Proposals must meet certain criteria that are listed in Section 3.5.

In order to separate the assessment role from the teaching role the examiner and the internal supervisor for a given thesis should be distinct (but the examiner is free to ask the supervisor for advice). If there is only one examiner and he/she wants to supervise a project, then the examination of this project should be delegated to someone else.

It appears as if employees in one or more divisions have not been awarded teaching credit when they have supervised master’s thesis projects. In order to emphasise that the department sees supervision as an important activity the internal supervisor should always be awarded teaching credit.

Previously some thesis projects have dragged on for a long time, sometimes with poor results. Students who fail to meet stated deadlines should now—at least in severe cases—expect to receive the grade “fail”. These deadlines should be included in a planning report handed in at the start of the project, and approved by the internal supervisor. The planning report must meet certain criteria which are listed in Section 3.7.

Another suggestion is to strengthen the prerequisites of the thesis course: currently it is possible to start work on an MSc thesis without having finished a BSc thesis. The plan is to include a finished BSc thesis in the prerequisites, and also to modify the course credit requirements.

To prepare the students better for the thesis work they should be offered some lectures, outlining what is expected of the various deliverables and giving the students more information about research and/or development methods and academic writing.

Finally a non-change: Chalmers has recently adopted new guidelines for assessing master’s theses [1], and it is not suggested that we stray from these.

3 Details

This section gives details of all the proposed changes.

Note that certain changes may require modifications to the course plans or other rules. It may also be necessary to tweak the procedures to avoid unforeseen problems.

3.1 Advertisements

If a company contacts us with a thesis proposal (“advertisement”) which is not obviously of good quality we ask for it to be improved before publishing it on our main thesis advertisement web pages. The quality is evaluated by the MSc thesis coordinators in cooperation with relevant examiners.

The current MSc thesis web pages state that “We recommend that you try to find the project in the industry since the industrial surrounding is a good start for a forthcoming working life”. We should rephrase this so that it is clear that students are not discouraged from pursuing internal thesis projects formulated in collaboration with one or more researchers at the department, for instance as follows:

You are encouraged to do your thesis work in good surroundings. This could for instance be in a company, where you can get experience of a professional environment and a good start to your working life; or within the department, working as part of a research team and preparing yourself for possible future PhD studies or other research activities. The choice is up to you.

It is suggested that every master's programme organises some course, lectures or other activities which (among other things) give the students a good idea of what options they have when choosing a thesis project, internally and/or at companies.

3.2 Prerequisites

In order to submit a thesis proposal a student must have finished a BSc thesis, and must have passed 60 higher education credits' worth of courses from the master's programme. If the student—despite having finished a BSc thesis—does not have a BSc degree, then he or she must, *in addition to* the requirements above, have passed 180 higher education credits' worth of Chalmers courses.

3.3 Examiner

There is a small number of MSc thesis examiners per master's programme. Every examiner should be responsible for a reasonably large number of theses every year, to ensure that he/she gets a decent overview over the produced theses.

Examiners are appointed in the same way as examiners of other courses, and get awarded teaching credit in the same way as other teachers.

The examiners are responsible for their programme's part of the course, but can in collaboration with the relevant director of studies delegate tasks—in particular supervision—to others. The course part has a certain budget (perhaps partly expressed as a certain number of teaching hours), depending on the number of registered students, and the examiners are responsible for not going over budget. The examiners' main priority should be to ensure that the quality of the final theses is high enough.

The examiners can grant exemptions from the course requirements.

One point to note is that the examiners may need to meet with a lot of people, attend a number of presentations, etc.: it may be useful to schedule events in such a way that the examiners' overheads are minimised.

3.4 Introductory lectures

Introductory lectures are offered at the start of every semester. The lectures should explain what is expected of the various deliverables, including thesis proposal, planning report, interim report for 60-credit theses, report, oral presentation, and opposition. They should also give the students more information

Compulsory?

about research and/or development methods and academic writing. Most or all of these lectures can be common for all master's programmes, so it seems useful if they are organised by a single entity (like one of the 5-year programmes).

3.5 Thesis proposal

Students should write and submit thesis proposals. A thesis proposal must be written in English and consist of the following parts:¹

- A description of the problem to be addressed in the thesis.
- A brief description of how the problem will be addressed.
- For every involved student: the master's programme(s) from which she or he wants to get a final degree. (The coordinators of the given programmes must approve the proposal.)
- An explanation of how the problem is related to the given master's programme(s).
- A brief explanation of how the intended learning outcomes listed in the course plan will be achieved.
- Possibly a suggested internal supervisor.
- A starting date for the thesis work.

We can provide the students with proposal templates.

Thesis proposals must satisfy the following criteria, which are adapted from Chalmers' guidelines for evaluation of master's theses [1]:

1. It must be clear that the thesis work will involve significant specialisation within the main field of study.
2. The problem must be formulated in a clear and delimited way.
3. The proposal must use relevant and correct language, good structure and layout, and give a good overall impression (more detailed criteria are available [2]).

If the language of the proposal does not meet this criterion, then it can still (but does not have to) be accepted, but then the students must get professional help with the writing of the report.

From whom?
Cost?

4. Any potential ethical consequences of the performed project must be presented.
5. It must seem likely that the project can be performed with a reasonable amount of support.

¹Largely based on Graham Kemp's thesis proposal page [3].

Thesis proposals can be submitted four times a year, at the end of study week four of every study period. Sometimes these deadlines may be too inflexible, in which case students should be allowed to hand in proposals at a more suitable date.

When a proposal has been handed in the relevant master's programme coordinators evaluate it (perhaps in collaboration with others), making sure that it is suitable for the given master's programmes, and that it adheres to the criteria listed above. If a proposal is accepted, then the examiners of the relevant master's programmes decide who should be the examiner for the given thesis. This examiner also assigns an internal supervisor.

Note that if the students have registered for different thesis courses, then several examiners may need to be involved. Hence it could be useful to include all relevant thesis course codes (currently CIUX02, CIUX60, DATX05, and DATX60) in every master's programme's study programme.

At most ten working days after a proposal has been submitted the coordinators give one of the following responses:

- Accept, along with information about the assigned examiner(s) and the internal supervisor.
- Reject, along with a motivation.
- Accept pending certain changes. The students get five working days to perform the required changes. At most five working days after being presented with an updated proposal the coordinators return with a new response: accept or reject.

It may be useful to assign several simultaneous projects to the same supervisor, who then gets the option to meet with all the students at once.

3.6 Internal supervisor

The internal supervisor for a thesis project is distinct from that project's examiner.

The internal supervisor should always be awarded teaching credit. The exact amount of credit is decided by the relevant director of studies. In many cases a fixed amount of credit per thesis may be suitable (more for internal projects and less for external ones).

3.7 Planning report

A planning report, prepared in collaboration with the supervisor(s), must be handed in to the internal supervisor at most ten working days after the starting date given in the thesis proposal. This report must be approved by the internal supervisor.

Enough time?

The planning report can be based on the thesis proposal. It should describe the problem to be addressed (possibly a refinement of the problem in the thesis

proposal), and give a more detailed description of how this problem will be addressed, including a time plan. The time plan must include the following items:

- An agreement between the internal supervisor and the students about the level and forms of supervision (see Section 3.8).
- Approximate dates for attending other students' thesis presentations (preferably in the first half of the project).
- Approximate date for half-time meeting or report (see Section 3.9).
- Approximate date for acting as an opponent (preferably in the third quarter of the project).
- Approximate date for oral presentation of thesis.
- Deadline for handing in the written report.

If the report deadline is not met, then the project can be given the grade "fail". The time plan can be modified if there is a good reason, and the internal supervisor and examiner agree to the modification.

Planning reports must be written in English and satisfy the following criteria, which are adapted from Chalmers' guidelines for evaluation of master's theses [1]:

1. It must be clear that the thesis work will involve significant specialisation within the main field of study, and that it will make use of knowledge from advanced studies within the main field of study. The planning report must also contain a comprehensive review of existing literature, including reflection on the project's connection to existing knowledge in the main field of study.
2. Potentially relevant engineering or scientific theories and methods must be identified and motivated.
3. The problem must be formulated in a clear and delimited way.
4. A realistic plan for the project must be formulated.
5. The proposal must use relevant and correct language, good structure and layout, and give a good overall impression (more detailed criteria are available [2]).

If the language of the proposal does not meet this criterion, then it can still (but does not have to) be accepted, but then the students must get professional help with the writing of the report.

From whom?
Cost?

6. If relevant: The selected methods are presented and justified from a life cycle perspective, with a focus on sustainable development.

7. Any potential ethical consequences of the performed project must be presented.
8. It must seem likely that the project can be performed with a reasonable amount of support.

3.8 Continuous reporting

As mentioned above the time plan must contain an agreement between the internal supervisor and the students about the level and forms of supervision. On the one hand the students must keep the internal supervisor informed of their work, so that any problems can be addressed early; on the other hand the students are entitled to a reasonable amount of supervision.

This agreement is perhaps most important for students doing external projects. These students could for instance submit a brief report to the internal supervisor every second week, and meet him/her in person every month.

3.9 Half-time meeting or report

Either the students, internal supervisor and examiner should have a half-time meeting, or the students should submit a half-time report to the internal supervisor and examiner. If the thesis work has not progressed according to plan, then a new plan should be drawn up, or in severe cases the examiner can decide to immediately abort the project, giving the grade “fail”.

3.10 Opposition

No changes to the opposition procedures are suggested. However, they should be presented more clearly in the informational material.

3.11 Electronic support

To avoid administrative overhead and delays, especially in a two-campus setting, it is recommended that proposals, responses, reports etc. are handled using an electronic system (for instance PingPong).

References

- [1] Riktlinjer för betygssättning av examensarbeten. Available from <http://www.chalmers.se/insidan/SV/utbildning-och-forskning/grundutbildning/undervisningsstod-for/riktlinjer-for> (both in English and in Swedish), 2011.
- [2] Chalmers tekniska högskola, Centrum för fackspråk och kommunikation. Bedömning av den skriftliga presentationen rapport - HISS. Available at http://thor.lib.chalmers.se/inst_fack/kandidat/Kriterier.pdf (only in Swedish), 2007.

- [3] Graham Kemp. Writing a project proposal. Available at http://www.cse.chalmers.se/~kemp/teaching/project/project_proposal.shtml, 2012.