

PROCEDURES FOR STUDENT DEGREE PROJECT WRITING – MASTER OF SCIENCE, MASTER, BACHELOR OF SCIENCE

(ACADEMICALLY ATTACHED TO THE DEPARTMENT OF ENGINEERING SCIENCES AND MATHEMATICS, TVM)

GENERAL

To be awarded a degree, you are required to have completed a degree project that has primarily been carried out individually or, in some cases, by no more than two students. In the event that the degree project has been written by two students, this should be reflected in the scope and depth. It should also be clear who did what.

AIM/GOAL

The overall goal of the degree project is for you to practice, develop and display proficiency in applying theory and method to solve problems relevant to your chosen profile or focus. Detailed intended learning outcomes for the degree project can be found in the course syllabus that applies to the degree project you intend to do.

ADMISSION REQUIREMENTS

The admission requirements are specified in the course syllabus that applies to your degree project. General admission requirements are a minimum number of passed courses according to the programme syllabus and a certain number of these needs to be at an advanced level. There are also requirements concerning the maximum number of compulsory courses that may be unfinished. The examiner appointed to your degree project will determine if you have the qualifications required for the proposed degree project.

SCOPE

Master and Master of Science in Engineering count for 30 credits, which corresponds to 20 weeks of full time work. Bachelor and Bachelor of Science in Engineering count for 30 credits, which corresponds to 10 weeks of full time work.

EXAMINATION

For your degree project to pass it is required that:

1. the written report is approved by the examiner and published in the LTU database
2. the work has been presented and defended
3. an approved written and opposition has been carried out for another degree project
4. you have participated at all the presentations held on the same day as your own.

START

PREPARATION

In order to be prepared for the degree project, it is recommended that you read/listen to the theses/presentations of a few other students before starting on your own.

SUGGESTED THESES

You should start looking for degree project ideas on your own accord. You may apply for projects externally, directly via companies or organisations, for example through their websites where theses tend to be advertised. The LARV days may also be an opportunity for contacting companies that have suitable projects for a degree project. "Thesis Luleå" can help by matching you with a company. Suggestions for theses can also be found on various websites, for example LTU Career Center. Suggestions can also be made by teachers at the department, either as a result of companies contacting LTU, or of suitable degree project subjects existing in current research projects.

A degree project can also be carried out at another university or research institute, in Sweden or abroad.

APPOINTMENT OF EXAMINER, SUPERVISOR AND APPROVAL TO BEGIN THE WORK.

Give a brief description (approximately 2-3 A4 pages) of your suggested degree project, including background, aim and implementation plan.

Then contact your faculty programme director, or a teacher in your field of interest, in order to have an examiner appointed for you. The examiner is your primary supervisor and the person who approves your starting the degree project and who ultimately decides whether it passes.

The examiner may also, in some cases, appoint an internal supervisor for you. The primary task of the internal supervisor is to advise you on the planning and writing of your report.

When the degree project is done at a company, an external supervisor should be provided by the company to be at your disposal, providing continuous guidance and discussion throughout the process. The external supervisor should have sufficient expertise in the field where you are applying your engineering knowledge. LTU reserves the right to approve this supervisor. You relay the contact information of the external supervisor to the examiner, who in turn relays the degree project information to the external supervisor.

When you are assigned an examiner, they will assess whether or not your subject qualifications are sufficient and whether the project you have chosen is suitable. The short description that you have previously submitted, as well as your curriculum vitae, will form the basis for this decision. The project's suitability is assessed based on whether:

- The degree project has clearly defined boundaries and is suitable in scope
- The aim is clearly defined and has a scientific/engineering basis.
- The degree project is clearly focused on the subject area that is being studied

If the degree project is done externally at a company, it is important that all parties (the student, the examiner and the company) all have the same idea about what needs to be done. A meeting with all parties in attendance may therefore be required before you receive approval to begin work on your degree project.

AGREEMENT ON PRACTICAL ISSUES, RIGHTS AND PATENTS

Before work commences, the student should have reached an agreement with the company or the department concerning any work and travel compensation, access to offices/workspaces, computers, housing, etc. In cases where the degree project might be subject to confidentiality and/or the degree project might lead to products or patents, these aspects must be agreed upon beforehand through contracts concerning confidentiality and rights. For help with contracts concerning commercialisation, contact LTU Business AB.

ADMISSION AND COURSE REGISTRATION

Work on the degree project formally starts once you have been admitted and registered on the course for degree project work. The course is applied either via admission.se or via a form depending on your study programme.

You apply by filling in and sending the form <https://www.ltu.se/student/Planera/Examensarbete/Examensarbete-vid-Teknikvetenskap-och-matematik-TVM-1.99242?l=en> to the Educational Administration of the Department (don't forget to sign it). Your entry requirements will be assessed, if they meet the preconditions, and your project is approved as suitable, the application will be decided by the appointed examiner. This means the formalities of starting your degree project are completed.

DURING THE COURSE OF THE DEGREE PROJECT WORK

PROJECT PLAN/PILOT STUDY/PLANNING REPORT

You should write a well thought-out project plan within 1-2 weeks of starting your degree project, corresponding to 3-5 A4 pages. The project plan is a steering document stating the direction, scope and sub-objectives of the work that you are to conduct. The plan should contain overall descriptions of sub-elements and a time schedule where the sub-elements' temporal and logical relation to each other is made clear. Comments concerning expected problems and alternative approaches should also be included. Possible expansion and necessary limitation should also be commented on. The plan may obviously change during the course of the work if the conditions change.

The plan is established to create a logical structure for the project and highlight challenges, time constraints and limitations from an early stage. After discussion with your examiner and possibly your external supervisor, you may need to adjust your project plan, after which your examiner approves it.

OPPOSITION

A written opposition of another degree project is part of the examination of your degree project. In the opposition you should show your ability to read, examine and analyse an academic report. You should provide an abstract of your opposition that describes the strengths and weaknesses of the report, see appendix 1. The abstract should be given to your examiner for an assessment of your discussion and examination.

PROJECT/SUPERVISORY MEETINGS

You should have regular meetings with your examiner and any external supervisor to ensure that the work progresses as planned. As the student, you are responsible for initiating project meetings and contacting the supervisor and examiner. The meetings should be scheduled well in advance. You and your examiner have a joint responsibility to ensure that all parties agree on what is to be done.

The Department provides active guidance for two semesters, beginning from the start of the course.

WRITING THE REPORT

The report is part of an examination of the degree project and reflects both your knowledge of the particular field and your ability to present an independent work in writing, which is of interest to future employers. Discuss the layout of the report with your internal supervisor at an early stage. External supervisors may also have preferences or demands concerning the layout, but there is no guarantee that they will meet the standards for a scientific report at LTU.

The report may be written in Swedish or English. The author is responsible for ensuring that the language used in the report is correct.

Use the Report Template by the department of Engineering Sciences and Mathematics:

<https://www.ltu.se/org/tvm/Verksamhet/Grundutbildning-och-avancerad-utbildning/Rapportmall-TVM-2017-1.168438?!=en>

EXAMINING THE REPORT

The report is normally examined in several steps and it will primarily be read by the examiner, who then provides comments for possible improvements. Remember that examiners have many other duties, and you need to schedule a time for them to read the report.

FINAL PHASE

APPLICATION FOR ORAL PRESENTATION

There are a few occasions each semester for oral presentations. More information is available on the web, LTU/Education/Student website/Study/Thesis at <https://www.ltu.se/student/Planera/Examensarbete?!=en>. It is important to have a dialogue with your examiner and for you both to agree that you have come far enough in the process to give your presentation.

ORAL PRESENTATION

The oral presentation is part of the examination of your degree project. You are expected to show that you are able to prepare and conduct a presentation. The presentation should be logical and organised so that persons who haven't read the degree project are still able to follow it. At the presentation, you should also show that you have an ability to highlight the important aspects of your work, as time is limited. Part of the assessment concerns whether or not you can handle delivering a presentation of a certain length (20-25 minutes). Prior to and in connection with the presentation of the degree project, your name and work title will be published. Some photography may occur. Rules for the above: <https://www.ltu.se/about/Behandling-av-personuppgifter-GDPR?!=en>

ADJUSTMENT, APPROVAL AND PUBLISHING OF THE REPORT

After the oral presentation there are often adjustments to be made. You will therefore meet with your examiner one last time to discuss what additional adjustments need to be made in response to comments made during the oral presentation.

Once the report is adjusted, it can be approved by the examiner. You are thereafter responsible to register your report in LTU's publication database <https://www.ltu.se/student/Planera/Examensarbete/Registrera-och-publicera-examensarbete?!=en> .

APPROVAL OF THE DEGREE PROJECT

Once all the elements of the degree project have been completed and approved and your report is registered in the publication database your final grade will be registered (G#).

PUBLICATION AND PRICES

Once your degree project has been approved, you can investigate whether there is interest in publishing parts of your work and results in a trade publication. If there is, you may be given the chance to write a short, more easily accessible article about your work and thus reach a wider audience.

You may also investigate whether there are any national and international prizes that you can apply for based on your work.

MISCELLANEOUS

PLAGIARISM

Plagiarism is a serious form of cheating. All theses are examined for plagiarism by the examiner before approval. If plagiarism is uncovered disciplinary action will be taken, which could lead to suspension and you may be required to write another degree project at a later date. Plagiarism is defined as theft of literary or artistic material. It includes copying and using the texts and images of others in your own report without citing sources or quotes. A degree project that is very similar to another, earlier degree project could also be seen as plagiarism, as could the reuse of previously published material to which you have contributed, if the source is not cited.

CONFIDENTIALITY

As a general rule, the principle of public access to official documents applies to all operations at the University, meaning that the public should have access to documents created at the University. For this reason, you should primarily choose degree project subjects that can be published in their entirety when finished. However, the Secrecy Act provides some possibilities for companies that provide theses to have them classified as confidential, in whole or in part.

The examiner contributes to the Department creating a written contract that should be signed by the Department, the company and the student. The report should be published, even if it is classified as confidential. A confidential report is not made accessible to the public until the confidentiality period has expired. A complete report must be filed in the publication database archive.

The degree project should be presented publically during one of the special presentation days that are arranged by the department. At these presentations, consideration must be given to confidentiality requirements.

PRINTING OF THESES

The department pays for printing for 1 copy to author and 1 copy to external supervisor and with a maximum of 10 color pages.

CHECK-LIST FOR WRITTEN DISCUSSION AND EXAMINATION OF DEGREE PROJECT

1. SUBJECT MATTER, PROBLEM AREAS

- ✓ Have the writers formulated relevant problems based on the chosen subject?
- ✓ Is there a background investigation, a literature review, State-of-the-Art etc.?

2. DISCUSSION OF PROBLEMS/AIM?

- ✓ Are the writer's research questions clearly expressed?
- ✓ Are the research questions relevant to the aim/problem?
- ✓ Is there a clear description of the aim/problem?

3. LIMITATIONS

- ✓ Has the scope of the degree project been limited in a reasonable and justifiable way?

4. CONNECTION TO THEORY/FRAME OF REFERENCE

- ✓ Have any choices been made in terms of theories, and are these consistent with the discussion of aim and problem?
- ✓ Has previous research/theses been taken into consideration?
- ✓ Have any relevant theories been left out, or are any of the theories superfluous?
- ✓ In what way does the degree project address the chosen theories?

5. METHOD

- ✓ Which inquiry approach has been chosen by the writer and in what way is this choice explained?
- ✓ Has an active choice of method been made? Is there a discussion of any alternatives?
- ✓ In what way does the degree project address the concepts of reliability and validity?

6. EMPIRICAL EVIDENCE

- ✓ What type of data collection has been made, and is it consistent with the method description?
- ✓ Is the scope of the empirical description appropriate?

7. ANALYSIS

- ✓ In what way has the empirical material been utilised?
- ✓ Are the described theories applied in the interpretation of the empirical evidence?
- ✓ Which method of analysis has been applied?
- ✓ How well does the analysis correspond to the contents of the degree project?

8. CONCLUSION/RESULTS/SUGGESTED SOLUTIONS

- ✓ Are the results and conclusions viable/are they based on the analysis of the empirical evidence?
- ✓ Does the writer provide any suggestions or recommendations?
- ✓ Has the aim been fulfilled?

9. DISCUSSION

- ✓ Are the conclusions clearly tied to the aim, research questions, theories, previous research and results?
- ✓ Is there an evaluation of the chosen methods?
- ✓ Is there a discussion on limits?
- ✓ Are there any suggestions for continued work?

10. REFERENCES

- ✓ Which references have been chosen, and have they been cited in a consistent manner?

11. DISPOSITION AND LOGIC

- ✓ Is the title a true reflection of the contents?
- ✓ Are there logical links between the various sections?
- ✓ Has any section been given too much, or too little space?
- ✓ Is there anything lacking?

12. LANGUAGE AND EXECUTION

- ✓ Have you found any spelling errors, problems in the grammatical structure or similar flaws?
- ✓ Are the sections logically divided?
- ✓ Are the list of contents, headings and source references consistent and correct?
- ✓ Are the tables, figures and associated text properly executed?

13. ETHICAL CONSIDERATIONS AND CRITICAL DISTANCE

- ✓ Is it possible to distinguish between material taken from literature/other sources and the writer's own opinions?
- ✓ Does the writer keep a critical distance to internet sources?
- ✓ Does the writer keep a critical distance to theories and conclusions?

14. OVERALL IMPRESSIONS

- ✓ Does the degree project have a clear analytical approach and well-articulated conclusions?
- ✓ What value does the independent degree project hold for an employer/does the writer contribute anything new?
- ✓ Is there evidence in the degree project of an independent and critical approach?