Course memo

Degree Project in Environmental Engineering and Sustainable Infrastructure, Second Cycle (AL230X)

Revised May 21, 2018
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1 What is a degree project in Environmental Engineering and Sustainable Infrastructure?

1.1 Learning outcomes, course content:
https://www.kth.se/student/kurser/kurs/AL230X?l=en

1.2 Course disposition
The course is designed as a delineated research project. The course structure may include, among other things, literature studies, problem formulation, collection and compilation of data and analysis. The degree project should be presented at a seminar. The degree project should be written in Swedish or English and presented in English. A summary should be included in both languages. The thesis will be checked for plagiarism.

1.3 Eligibility
Generally, the main part of programme courses should be completed before the degree project may be started. Master of Science in Engineering (300 credits): at least 240 credits should be completed before the degree project may be started. Master’s degree (120 credits): the main part of the programme, at least 60 credits, should be completed before the degree project may be started, of which 30 of these credits are within the specialisation area for second-cycle studies in the main field of study. It is the examiner’s responsibility to decide whether the student has the appropriate specialisation and that the student has completed the main part of the programme before the degree project is started. Exemptions may be granted after hearing by the director of first and second cycle education.

1.4 The purpose of the degree project
The degree project is the final step in your education; the ultimate test of your scientific skills. The degree project work requires that you use the knowledge and maturity that you have acquired during your long and tedious studies. The purpose of the degree project is both to give you valuable experience and to develop your ability to independently and under realistic circumstances research a specific, well defined problem within the scope of the subject.

- Any individual degree project is a research problem with a specific aim. Focus should be on investigation and analysis of the defined problem. All work done is to be documented in a research oriented way. The research problem must thus be clearly defined and delimited so that it can be completed successfully within five months.
- Document your work in a report that not only presents what you have done but also is witness of your ability to evaluate what has previously been done in
the field by other researchers. You are to research what has been done and write an introduction that presents previous researchers work, shows that there is a need for further research (which is what you plan to do) and define the aim of your research. Your thesis is to be organized in a scientific and logical way; it should be interesting with respect to the scientific problem. The language used in the thesis should be of high quality.

- Orally present the work. It is very important that you have good oral presentation skills. You are to present your research project at KTH, to peers and an examiner that grades you.
- Develop your written presentation skills. The thesis is to be formatted according to a defined style. This task makes sure that you have the basic relevant skills for formatting documents which is an expected skill of a Master’s level graduate from KTH.
- Critically evaluate scientific reports. It is important that you learn to critically evaluate your own work and other peoples work. You will be responsible for making a review of one other students report and be the opponent to the student when they make their oral presentation.

1.5 Time frame
Normally about 20 weeks are needed from start to finish of the degree project. The time is not only dependent upon your work speed but also on your supervisor(s) and examiner’s work load; they need time to review and comment on your report. The time may be longer if you do not work full time; if you take vacation or only work on the degree project part time. The degree project is part of your education at KTH, it is worth 30 credits, which correspond to five months (800 hours) of full-time work. You may register the start of your degree project at any time during the official terms at KTH (not open between the mid-June and the mid-August). No one may register nor may they give oral presentations during the times when KTH is not open. You must register before you start your degree project.

1.6 How to find a suitable project
Projects are normally decided upon by discussions between students and researchers. You should contact the different researchers in the field in which you want to do research and book a time to discuss possible thesis topics. Preferably you should come prepared to present some of your ideas; what you think would be an interesting project and why. You can check out the programme web or Canvas page for any thesis suggestions, and department homepages to acquaint yourself with the researchers and the different research topics that are ongoing at the department.

Project suggestions - the supervisor judges whether the project is suitable for a degree project and checks to see that you have the prerequisites necessary for doing the project. You must have taken courses that provide the knowledge and competence for doing a good job on the project.

Projects at companies or organizations
Projects may also be done at companies (not only big companies but small consulting companies as well). Some companies post lists of potential degree projects on their home pages. There is also KTH Degree Project Portal:
that lists projects in all fields submitted to the site by a wide range of companies and other universities looking for students to do research in a specific topic. Even if you carry out your degree project for a company you still are required to have a supervisor and an examiner at KTH and you still must give an oral presentation at KTH and format the thesis according to the requirements. Formally the KTH advisor is responsible for the aim, content and execution of the degree project and is responsible for informing the student of the requirements. When degree projects are performed at a company or organization, it is important that the company/organization, the student and the academic supervisor share the same view of the purpose of a degree project and the responsibilities of those involved. Make sure the information is shared and the agreements confirmed by all parts.

If you perform your degree project outside of KTH, you must make it clear that the report you write is open to the general public; it cannot be a secret report only for the company. All degree project thesis are to be uploaded to the KTH database DIVA and be available to the general public.

All expenses incurred during the master thesis work (materials, travel etc.) must be paid by the company or by the project within which the master thesis is carried out. No compensation will be paid by the master thesis course.

It may occur that students doing their projects within a company get some kind of payment. This is an agreement between the student and the company. The degree project is still a part of the KTH education and must be approved of by your KTH supervisor and examiner prior to commencement of the project.

Projects at other universities
It is also possible to do your degree projects at other universities. There are two different ways to handle this, but make sure everything is OK:ed before you start. One way to handle this is that you register for the degree project course at the other university. If you do this you have to check in advance with your Programme Director of the programme in which you are enrolled that the course from the other university will be approved and counted toward your degree; this must be approved prior to starting the project. In this case you follow the rules for the course that exist at the other university and not the KTH rules. Thus you would not be graded by KTH but by the other university and the course credits transferred to KTH.

The other way is that you have both an supervisor at KTH and at another university where you are going to do your work. In this case a contract between your supervisor at KTH and the supervisor at the other university should be written, prior to the start of your project, which regulates economic compensation for the advisory work done by the external academic supervisor. In this case your official supervisor is the one at KTH, the acting supervisor is at another university. You must follow the rules for and will be graded according to the rules for the degree project at KTH.

Insurance
All students doing degree project abroad are covered by insurance (https://www.kth.se/en/student/program/utlandsstudier/utbyte/info-antagna/forsakring-och-sjukvard-1.664089) – but only when they have a valid
registration to the degree project course. Make sure you are registered before you leave Sweden.

**Individual work**
A degree project is normally an independent work resulting in an individual report. It is however possible that two students work on one project but in this case they should have individual problems to work on within the project that are closely related. Either each student will write an individual report or students may apply for permission to write a joint report with two authors. An application should be addressed to the examiner and should explain the problem and motivation as to why it is not possible to write individual reports. If the examiner allows one report by two authors then the contributions of each individual must be clearly stated.

2 People involved in Degree project AL230X

**Course responsible:** Katrin Grünfeld *(karting@kth.se)* handles questions regarding finding a supervisor or examiner. It is possible for the supervisor to also be the examiner but this is not recommended, however KTH does not prohibit this.

**Course coordinator:** Archana Ashok *(archanaa@kth.se)* is the contact person regarding presentation and opposition, for booking a seminar room for your presentation and any other question that is not answered in this PM.

**Supervisors**
Both senior researchers and PhD students at the Department of Sustainable Development, Environmental Sciences and Engineering (SEED) may act as academic supervisors. If you have an external supervisor, at for instance a company, you still need to have an academic supervisor.

The supervisor is responsible for informing the student of all the requirements and for guiding and supporting the student in their research and is responsible that the student successfully completes the project course worth 30 credits.

Contact your supervisor for anything connected to your actual thesis idea and writing and the form and content of your presentation. The supervisor is also responsible for sending the required information for reporting your grade to the administration once you have completed all the required steps for your thesis (see the last section in the work process section).

If your project is outside KTH and you have a both a KTH supervisor and an external supervisor you need to be very clear about the limits of your project. Some external supervisors may ask students to do work that, according to the KTH supervisor, is not actually within the frame of the degree project. On the other hand there might be things that the external supervisor does not consider belong to the degree project that is actually, according to the KTH supervisor, part of the project (e.g. literature studies, attending seminars). The KTH supervisor decides what is or is not part of the degree project not the external supervisor.
You normally will have the closest contact with your supervisor in the beginning and at the end of the work. During the actual work phase, most students who do external degree projects just report regularly to their supervisor how the work is progressing. You should, though, have a discussion of the disposition of your report with your supervisor before you start the actual writing. Remember that you are to work independently on your research project and that your supervisor has lots of other responsibilities and cannot constantly help you. If the work is not progressing the way it should, it is important that you discuss this thoroughly with the supervisor. When you have written most of your thesis document then you should make a schedule stating when he/she should read your draft. When you give your document to your supervisor agree on a date that it is to be returned to you. The supervisor should at that time agree on a date when they expect to get the next draft. Agreeing on the work time of each person, student and supervisor, is a good way to make sure there are no unnecessary delays; writing your report is an active process. You must be aware that supervising you is just one of many tasks of your supervisor. It is up to you to keep in touch with him/her. You cannot expect him/her to keep in touch with you. Also you must allow him/her reasonable time to read your report. You must also bear in mind that the supervisor is given credit for 25 hours for supervision of one degree project.

Examiners (for updated list, see https://www.kth.se/student/kurser/kurs/AL230X?l=en)

Course administration
The course administration (kursadmin.seed@abe.kth.se) handles course administration, such as providing a report number (Trita number) once your revised report has been approved by both the supervisor and examiner, publishing your master thesis in Diva and reporting your final grade.

3 Confidentiality
The master thesis is part of the student’s degree and will be presented in writing and orally in front of an audience. Higher education institutions are authorities covered by the principle of public access, which means limited possibilities to keep student essays/master thesis confidential. This means that the report, which is presented, assessed, and graded cannot be confidential. It is thus important during the planning of the master thesis to consider whether it is likely to contain information that may not be disseminated. While KTH has no responsibility to sign any kind of confidentiality agreement, the student is free to do so with the company/organization on his/her own. It is possible for the student to write an academic thesis with de-identified information and a special report for the company/organization. The publicly available thesis must however contain all the information necessary to assess and grade its quality. If the potential results should not be made public at all, it is perhaps not suitable for the assignment to be carried out as an essay/master thesis. All degree projects will be published electronically in full text version in the publication database DiVA.
4 Your report
4.1 Language and format
To pass the course the degree project must be presented at a seminar. The degree project must be written in either Swedish or English and presented in English. A summary in both languages must however be included.

Regarding Master of Science in Engineering (300 credits) students: in order to register the credits, the title needs to be available in both Swedish and English.

The thesis is to be formatted according to a defined style KTHs graphical profile (https://intra.kth.se/en/administration/kommunikation/mallar/avhandlingarochexamenarbeten). This task makes sure that you have the basic relevant skills for formatting documents which is a is an expected skill of a Master's level graduate from KTH.

(Template and formatting tips: see document in Canvas).
(Other resources: Centre for Academic Writing: one-to-one guidance on matters of spoken and written language, structure, referencing, etc (https://www.kth.se/en/ece/avdelningen-for-larande/sprak-och-kommunikation/verksamhet/cas/centrum-for-akademiskt-skrivande-cas-1.183884))

4.2 Word limit
We have a word limit for master theses, both to allow examiners to provide good and thorough feedback and to help you master students write in a clear and concise manner.
For master students writing alone: preferably not exceeding 20 000 words excluding references and appendices.
For master students writing in pair: preferably not exceeding 25 000 words excluding references and appendices.
Appendices are allowed, where you can present additional material (data, more detailed tables or illustrations, additional information from interviews such as interview guide or questions etc.)

4.3 Plagiarism
Plagiarism is defined as submitting someone else’s work as your own. Text that you use from other authors must be cited with a reference. All master theses are checked for plagiarism using specific software with access to databases and deposits across the world. All supervisors and examiners are obliged to report all suspected cases of plagiarism to the Disciplinary Board. Please note that self-plagiarism, i.e. copying material from assignments in other courses for which you have been awarded credits, is also forbidden. If you have any questions regarding plagiarism it is important that you discuss this with your supervisor. Learn more at: http://www.kth.se/en/student/studentliv/studentratt/fusk-och-plagiering-1.323885?programme=ald-ma
Your report will be checked for plagiarism by your supervisor. This is done automatically when you upload your report in Canvas.

5 Presentation
The presentation is usually one-hour long and as follows:
Presentation by student 15-20 min
Questions from the opponent 10-15 min
Questions from the supervisor/examiner 10-15 min
Questions from audience 10-20 min

The draft has to be uploaded at least one week before the presentation.
Two weeks per semester will be especially dedicated for presentations and announced on Canvas by the Course responsible at the beginning of each semester.
You are welcome to invite friends and family to your final seminar!
Even if you present your project to another audience not at KTH you still are required to present for SEED at KTH. If you for some reason cannot be physically present at KTH it is possible to present via Skype.

6 Grading
Grading scale: Pass/Fail

Graded elements are the eight learning outcomes presented in Appendix 1. This can be summarised as:

- **Work process**: Ability to independently plan and carry out the thesis work, within the scheduled time frame. Ability to take supervision.
- **Thesis content**: Problem formulation, methodology, analysis, evaluation. Adequate scope. Before the presentation the report script needs to be approved, after the seminar the final report needs to be approved.
- **Presentation**: Written and oral at final seminar.
- **Opposition**: Oral opposition of another student’s thesis at his/her final seminar.

*See Appendix 1 for detailed criteria for Pass and Fail.*

For an approved thesis these elements needs to be carried out within the time frame agreed with your supervisor.

**If you do not finish your project**

If, for some reason, you do not finish you’re degree project in the time period stated on your registration form then you must tell your supervisor. Projects that are not finished within one-two years after they started are subject to loose of advisory support.
7 Work process
All degree projects are different, but generally follow the same structure. The following gives an overview of what you need to do to complete your thesis.

<table>
<thead>
<tr>
<th>Step in the work process</th>
<th>Contact/ discuss with</th>
</tr>
</thead>
</table>
| **Approval with program coordinator**  
If the degree project AL230X is not part of your program, you must make sure that it will be accepted as part of your final degree from KTH. If it is not within the same main subject area as your degree, your Programme Director must formally agree to make an exception. It is the responsibility of the student to have this confirmed.  
| Student’s own Programme Director |
| **Fulfilment of prerequisites**  
Make sure that you fulfil the requirements and are eligible to be admitted to the course AL230X. You must not start planning your thesis unless you do. Ask the Programme Director if you are uncertain.  
| Student and Programme Director |
| **Decide on specific thesis topic**  
There are many different ways in which you can find Master degree project. Proposals may be formulated by the student, by the supervisor, by a company, or by some other organization.  
Never proceed with the planning of your degree project without discussing with a supervisor.  
| Supervisor |
| **Find a supervisor**  
If the topic was not already defined by a supervisor at SEED, at this point you need to find a supervisor. If you have an external supervisor (outside KTH, at for instance a company), you also need a supervisor at SEED. The Course responsible can help you find a supervisor.  
| Course responsible  
Supervisor |
| **Brief thesis proposal**  
The specification or your research project should contain:  
• a headline indicating the preliminary title of your degree project and the current date  
• your name, the name of the supervisor(s) and the name of the company and the company supervisor (if the degree project is made outside of SEED)  
• a concise definition of the problem,  
• a description of the aims and expected outcomes of the project,  
• a clear delimitation of the problem,  
• a description of the methods to solve the problem,  
• a list of equipment needed to solve the problem.  
Discuss it with your supervisor. When you have agreed on your proposal, your thesis work can be registered.  
<p>| Supervisor |</p>
<table>
<thead>
<tr>
<th>Step in the work process</th>
<th>Contact/discuss with</th>
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<tbody>
<tr>
<td><strong>Apply and register for degree project course AL230X</strong></td>
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<tr>
<td>Download the registration form.</td>
<td>Course responsible</td>
</tr>
<tr>
<td>Fill in the form and hand in to the Course responsible.</td>
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<tr>
<td>You will not be admitted unless you are eligible (i.e. fulfil the requirements for being admitted to the course). Your supervisor is responsible for checking that the requirements are fulfilled.</td>
<td>Supervisor</td>
</tr>
<tr>
<td>You also need to check with your own Programme Director if any additional forms may be needed in your case. For instance, if your program is coordinated by another department, you may need an approval to perform your degree project at SEED.</td>
<td>Student’s own Programme Director</td>
</tr>
<tr>
<td>You need to be registered as an active student while performing your degree project. This is normally done at “My Pages” (“Mina sidor”) and needs to be done every semester. Once you are registered to the course, you will automatically get access to the Canvas page of the course.</td>
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<tr>
<td><strong>Project plan</strong></td>
<td>Supervisor</td>
</tr>
<tr>
<td>Before starting your research, you should plan it carefully by writing a project plan, containing a preliminary outline of your report and a time plan. You and your supervisor may then use it to follow up your progress, and revise the plan if necessary. One of the graded elements will be whether you manage to plan your work and follow your time plan. If problems out of your control arise, make sure to inform your supervisor and revise your time plan.</td>
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<tr>
<td><strong>Preliminary outline of the report</strong></td>
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<tr>
<td>- Background to the problem</td>
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<tr>
<td>- Rationale of the study (why is this study important)</td>
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<tr>
<td>- Overall aim and specific objectives</td>
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<tr>
<td>- Research questions/hypothesis</td>
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<tr>
<td>- Scope</td>
<td></td>
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<tr>
<td>- Theory and methods</td>
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<tr>
<td>- Anticipated results, contribution</td>
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<td><strong>Time and activities plan.</strong></td>
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<tr>
<td>This may include planned dates and time on task for:</td>
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<tr>
<td>- Planned supervision meetings</td>
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<tr>
<td>- Research activities</td>
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<tr>
<td>- Deliverables/progress milestones</td>
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<tr>
<td>- Time for opposition</td>
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<tr>
<td>- Time for defence (Check the dates of scheduled seminar weeks on Canvas)</td>
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<tr>
<td><strong>Manage your own project</strong></td>
<td>Supervisor</td>
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<tr>
<td>It is the responsibility of the student to manage the degree project work.</td>
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<tr>
<td>It is the responsibility of the student to make sure that project</td>
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</table>
**Step in the work process**

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<tr>
<th>meetings are planned according to the time and activities plan, as well as rescheduling meetings and revising the time plan if necessary.</th>
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<tbody>
<tr>
<td>It is also the responsibility of the student to take dated working and meeting notes. Also save email correspondence. It will help you and your supervisor to follow up your work.</td>
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</table>

**Thesis research process (examples)**

Performing a research project is a non-linear process, several steps may be iterated, and even the initial research question may be reformulated after some time.

The process may contain the following activities. The corresponding sections should be included in your report, not necessarily in this order.

- Review of research front, literature review
- Problem formulation
- Identify overall aim and specific objectives
- Formulate detailed research questions/hypothesis
- Determine delimitations (what’s included, what’s not?)
- Define your theoretical framework
- Select methodological approach
- Collection of data
- Analysis
- Discussion of results/findings
- Draw conclusions

**Writing your report & report template**

It’s recommended that you work on your report continually, as part of the research process.

The thesis can be written in Swedish or English. A summary should be included in both languages.

Template and formatting tips: see Canvas.

The front page must be according to the official degree project report template. This must be used to make sure all the necessary information is included.

Find the cover template at: [http://intra.kth.se/kth-cover](http://intra.kth.se/kth-cover)

See Appendix 2 for instructions on how to fill in the information for the front cover page.

**Opposition of a fellow student’s thesis at final seminar**

You are required to read and make an opposition of a fellow student’s Master thesis. The Course coordinator will contact you with the name of the student for whom you will be opponent unless your supervisor suggested one.

<table>
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<th>Contact/ discuss with</th>
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<tr>
<td>Supervisor</td>
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<tr>
<th>Contact/ discuss with</th>
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<tr>
<td>Student</td>
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<tr>
<th>Course coordinator</th>
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<tbody>
<tr>
<td>Step in the work process</td>
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<tr>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Guidelines for the opposition can be found in Canvas.</td>
</tr>
<tr>
<td><strong>Defence of own thesis at final seminar</strong></td>
</tr>
<tr>
<td>Agree with your supervisor when it is time to present. Make sure the supervisor and</td>
</tr>
<tr>
<td>examiner will have time to read your draft! Check the dates of scheduled seminar weeks</td>
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<tr>
<td>in Canvas. Agree on the date and send an email to the Course coordinator at least **four</td>
</tr>
<tr>
<td>weeks** before the up-coming seminar week.</td>
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<tr>
<td><strong>NOTE:</strong> You need to be registered as an active student when presenting your degree</td>
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<td>project. This is normally done at “My Pages” (“Mina sidor”) and needs to be done every</td>
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<td>semester.</td>
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<tr>
<td><strong>Submission of your draft before seminar</strong></td>
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<tr>
<td>Submit your final draft at the latest one week before the seminar to Canvas.</td>
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<tr>
<td><strong>Submission of final report for plagiarism check and grading</strong></td>
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<tr>
<td>Your supervisor will make a plagiarism check of the report in Canvas. The report that</td>
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<td>you submit is the one that is graded.</td>
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<td><strong>Report number (TRITA)</strong></td>
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<td><strong>When your supervisor and examiner have approved of the final revised report</strong>, you</td>
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<td>should retrieve a report number from the course administration.</td>
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<td>You will need to send an email to course administration with the following information:</td>
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<tr>
<td>- Title of the thesis</td>
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<tr>
<td>- Main field (ABE/ Sustainable Development, Environmental science and Engineering)</td>
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<tr>
<td>- Examiner</td>
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<tr>
<td>- Supervisor</td>
</tr>
<tr>
<td><strong>Submission of final report</strong></td>
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<tr>
<td>Email your final report (incl. report number and using front page template) in pdf-</td>
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<tr>
<td>format to the course administration and your supervisor.</td>
</tr>
<tr>
<td>The course administration will print a copy to be stored in the archives.</td>
</tr>
<tr>
<td><strong>Upload thesis for on-line publication in DiVA</strong></td>
</tr>
<tr>
<td>Master theses are not printed, but published on-line in pdf-format. You are responsible</td>
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<tr>
<td>for uploading your thesis in Academic Archive Online (DiVA). Information on how to</td>
</tr>
<tr>
<td>upload your thesis can be found through the following link:</td>
</tr>
<tr>
<td><strong>NOTE:</strong> It is important that you choose the right organization: Choose organisation</td>
</tr>
<tr>
<td>under ABE: <strong>Hållbar utveckling, miljövetenskap och teknik</strong> (<strong>in English:</strong> Sustainable</td>
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</table>
Step in the work process | Contact/discuss with
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**development, Environmental science and Engineering).**

**NOTE:** Your supervisor will not report your final grade until you have uploaded your report in DiVA. Inform your supervisor by mail when this has been done. The report you upload will not be replaced even if you later find errors of any kind! The course administration will check the uploaded information and have it published.

**Report final grade**
Your grade will be reported by your supervisor when you have completed the following
- Opposition completed
- Final seminar completed
- Approved final report
- Final report uploaded in DiVA

The supervisor is responsible for informing the course administration, with a copy to the Course responsible (by email) when your thesis is completed.

The following should be included in the email:
- Final grade
- Date of seminar
- Date of final approval
- Name of supervisor at KTH
- Name of examiner
- Title of report in Swedish (if needed)
- Title of report in English
- Confirmation that the opposition is completed (check with course responsible)
- Confirmation that the final report uploaded in DiVA, for course administration to publish

| Responsibility of supervisor |  |
Appendix 1: Degree project 30 cr for Master of Science degree, 300 cr /Master's Programme, 120 cr. Goals Criteria for PASS
Guidelines for FAIL-mark
*After completion of the degree project, the student should be able to*

| 1. demonstrate knowledge of the scientific grounds of their chosen subject area, as well as in-depth insight into current research and development and in-depth knowledge of relevant methodology. | • The literature study is well executed.  
• Current research and developing with bearing on the work is shown clearly.  
• The student’s choice of method is well-founded, based on science or proven experience, and evaluated against other methods.  
• Relevant knowledge from the courses of the programme has been adequately applied. | • The literature study is inadequate.  
• Links to current research and development are lacking or insufficient.  
• Unsatisfactory justification for the chosen method or evaluation thereof.  
• The work shows a lack of knowledge from previous courses in the programme. |
|---|---|---|
| 2. demonstrate the ability to search for, gather and integrate knowledge and identify their need for additional knowledge, all with a holistic, critical and systematic approach | • The task of the degree project is handled independently and systematically, based on critical analysis and synthesis of relevant literature.  
• The work demonstrates a holistic approach. Carefully selected databases and search tools are used.  
• The need for additional knowledge is discussed. | • There is a significant lack of relevant literature, or it has not been integrated in the work.  
• The literature is handled with an uncritical approach.  
• The work is not based on existing knowledge in the area. There is no |
### 3. Demonstrate the ability to identify, analyse, assess and handle complex phenomena, questions and situations, even with limited information

- Relevant complex phenomena, questions and situations are identified in the degree project.
- The work shows clearly that these have been handled and analysed well, despite the available information being limited.
- Assessments linked to the questions posed in the degree project and the findings from these are adequate.

### 4. Demonstrate the ability to plan and, with adequate methods, carry out skilled tasks within a given time frame and evaluate this work

- The schedule drawn up at the start of the degree project has been followed.
- Skilled work is carried out within the time frame – and with the methods – agreed on.
- Any changes in the plan or the work are established via agreement between the student and supervisor.
- Assets and limitations in the work carried out are clearly defined.

### 5. Demonstrate the ability to develop and evaluate products, processes, systems, methods, technical solutions or systems

- The chosen strategy is explained and implemented in such a way that developed and evaluated products, processes, methods, systems or technical solutions are adequate.

### Discussion on development of the work

- Complex phenomena, questions or situations are not formulated, handled or analysed in the degree project.
- The work shows the lack of a holistic approach to the problem, or is limited without motive so as to reduce the complexity of the task.
- There is a lack of relevant assessments linked to the questions posed in the degree project.
methods or technical solutions with respect to people's circumstances and needs, as well as society's goals in terms of economically, socially and ecologically sustainable development.

<table>
<thead>
<tr>
<th>6. demonstrate the capacity, both orally and in writing, in dialogue with different groups, to clearly account for and discuss their conclusions and the knowledge and arguments on which these are based</th>
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| solutions are adapted to people's needs and circumstances.  
  - Relevant social goals are taken into consideration in such a way that future generations' ability to meet their own needs is not compromised. |
| or developed in the degree project.  
  - Relevant analysis of manageability for an effect on people, society, the environment and economy is inadequate or missing. |
<table>
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<th>7. demonstrate the ability to make assessments with</th>
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| The report is well-organised, well-formulated linguistically and coherent.  
  - Good argumentation has been provided for the conclusions.  
  - The summary of sources is relevant, independently formulated and well integrated.  
  - Oral presentation and opposition, as well as communication during the course of the work, demonstrate the ability to present and, while being open to feedback, discuss the work and conclusions with various parties such as clients, supervisors, teachers, researchers and students. |
| The content is not presented systematically, and the text or the oral presentation is difficult to understand.  
  - The argumentation for the conclusions is inadequate.  
  - The summary has no clear direction, is too close to the source, or lacks coherence.  
  - The written report is not well formulated linguistically or coherent.  
  - The ongoing communication or the oral presentation do not demonstrate sensitivity, clarity or the ability to discuss the work and conclusions. |
| The degree project demonstrates assessment skills, such as being able to explain, justify, criticise and |
| Assessments are missing or inadequate. |
| regard to relevant scientific, social and ethical aspects recommend. | • Relevant (i.e., subject-related) assessments with scientific grounds or proven experience have been made in the degree project.  
• The degree project contains reflections on social and ethical aspects, where these are not deemed irrelevant. | • The work shows an inability to put the study in a broader context.  
• The degree project does not address ethical or social aspects, despite the fact that these may be relevant to the project, or there is no justification for why these aspects were not addressed. |

| 8. demonstrate the skills required to participate in research and development work or to independently work in other skilled activities | • The student immerses themselves in the task very well and demonstrates the ability to participate in the work culture prevailing in the environment in which the task is to be performed.  
• The student demonstrates the ability to test, evaluate and even reject ideas and solutions in discussions concerning the task.  
• The student shows the capacity to take initiative and is open to supervision and criticism.  
• The degree project is largely carried out independently. | • Despite supervision and guidance, the student does not show the ability or willingness to participate and collaborate in the prevailing work culture.  
• The student does not bring constructive ideas to discussions with supervisors and shows a lack of interest in advice and new suggestions.  
• The student does not demonstrate creative work of their own between supervisions. |
Appendix 2: Instructions - Front page _ AL230X - Degree project in Environmental Engineering and Sustainable Infrastructure, Second Cycle

1. Use the following link to access the KTH template generator: http://intra.kth.se/kth-cover/

2. Fill in the information:

**Swedish version:**

*Examensarbetets nivå o poäng:* **Examensarbete, avancerad nivå (30 hp)**

*Examen:* Välj mellan: **Masterexamen, Civilingenjörsexamen, Master och Civilingenjörsexamen**

*Huvud/teknikområde:* Det beror på vilket program ni har läst, t.ex. Miljöteknik, Samhällsbyggnad eller Energi o miljö.

**English version:**

*Cycle and credits of the degree project:* **Degree project, second cycle (30 credits)**

*Degree:* Choose between: **Degree of Master (120 credits), Degree of Master of Science in Engineering, Both Master of Science in Engineering and Master**

*Main field or subject of your degree:* **It depends on which program you have been studying, e.g.Environment Engineering, The Built Environment or Energy and environment.**

**TRITA, ISSN, IRSN**

The Trita number (ABE-MBT-.....) is what you get from the course administration AFTER your examiner has approved the final version of your report. It is also the number you have to write on the front page of your report. You don't have to fill in ISSN or IRSN. If you leave these fields empty they will not appear on the cover page.