

Graduation guide for Environmental Engineering thesis work at Department of Water Management¹, MSc in Civil Engineering

Introduction

The final educational activity when doing an MSc in Civil Engineering is the graduation project, resulting in an MSc thesis. The graduation project is 40 EC. Graduation projects can be conducted entirely within the university or with an external host organisation such as a consultancy, a research institute or water management body. The MSc thesis should in principle be in English. Under some circumstances, e.g. if the host organisation so demands, it can be in Dutch, subject to permission by the thesis committee chair. In any event, there must be a summary in English.

There are a number of administrative requirements for the graduation project. Failure to meet these requirements may result in unnecessary delays in obtaining your degree! The most important requirements can be found in Articles 22, 23, 24 and 25 of the Rules and Guidelines Board of Examiners (R&G BoE MSc CE), which is published at the website: <https://www.tudelft.nl/en/student/faculties/ceg-student-portal/education/education-information/regulations-ter-rules-and-guidelines/>. If you decide to graduate as a MSc of Applied Earth Sciences (AES), you check the corresponding documents of AES (R&G BoE MSc AES), at the same webpage.

Moreover, you should check form CIE-0 or AES-0 on <https://www.tudelft.nl/en/student/faculties/ceg-student-portal/education/education-information/ceg-forms/>.

This graduation guide does not replace the documents just mentioned. What you can expect in this guide is an overview of the graduation process at the Department of Water Management. The administrative procedures are summarized in a checklist for MSc graduation in Environmental Engineering for the section of Sanitary Engineering (SE). This also mentions the different forms that have to be filled in and give some additional requirements, so read it! If you do not intend to graduate from this section, ask for the corresponding checklist at the department/section of your choice if they have one. The procedure will be more or less the same as at SE, but there might be some small differences you should be aware of.

Be aware that if you decide to do your MSc thesis at the faculty of applied sciences (AS), or any other faculty, you do fall under the regulations of the MSc Civil Engineering (MSc-CE) or the MSc-AES. This means that you have to follow the procedures described in the documents mentioned above. If your graduation supervisor at the other faculty is not aware of that, he/she might unintentionally follow the rules of their faculty. This is not allowed and it is your own responsibility to point your supervisor to the rules and guidelines from MSc-CE or MSc-AES. This is especially important for the composition and procedure for your MSc thesis committee and your defence, since this varies from faculty to faculty within TU Delft.

If after reading all this documentation you still have questions, you can contact the thesis coordinator, Boris van Breukelen, or, if you already have one, your supervisor for the graduation project.

¹ This graduation guide is be similar for graduations in other departments within the environmental engineering track. However, always discuss with you foreseen supervisor if there are small differences in the procedures or expectations.

Beginning the graduation process

You may start work on your graduation project only when you have gained at least 65 credits on the MSc programme. The Department recommends at least 70 credits. If you had to follow a transitional programme (e.g. because you have transferred from a University of Applied Sciences, or HBO) you must have completed this programme first. If you intend to start your graduation project, you must complete the form CIE-1 or AES-1 (see further the checklist).

The overall graduation process for the thesis work can be divided into the following phases:

- A. Orientation
- B. Start
- C. Execution
- D. Completion

A. Orientation

You should start thinking about the topic of your master graduation project well in time. To get ideas, you can look at MSc theses produced by former students; look for proposals on notice boards on the website of the involved department and on the brightspace page for Environmental Engineering. Some research groups organise MSc graduation events where PhD students present their topics. When you know the field of interest (e.g. soil processes, solid waste, air quality, wastewater, industry water, drinking water, microbiology, etc.) talk with the corresponding professors, PhD students and others. All departments that are teaching in the core programme of Environmental Engineering or in the specialisation courses of the Environmental Science or the Environmental Technology programme are eligible to supervise your MSc thesis, unless they follow the MSc-CE or MSc-AES R&G. Sometimes external organisations propose interesting topics. However, the topic of your master graduation project must be approved by the chair of your thesis committee, so you should not make any firm agreements before the topic has been formally approved.

The thesis committee

During the graduation process you will be guided and assessed by a thesis committee. This comprises:

- at least three examiners (academic members of staff) from within TU Delft, from at least two different sections.
- The chair of the committee must be an assistant, associate or full professor, who is a course responsible examiner in one of the core or specialisation courses of the MSc-track EE.
- at least two members have to be affiliated to the faculty of CEG.
- at least two members should have their UTQ (university teaching qualification), or a UTQ equivalent, or are active to obtain one
- Maximal 1 member can be a researcher or PhD candidate, under the conditions mentioned in article 23.2 of the R&G BoE MSc CE.
- In addition to the three examiners from the TU Delft staff, the committee may also include staff from other Dutch universities and external members.

The members of the thesis committee are selected by the chair of your thesis committee, the thesis coordinator and the student. One of its members will be your thesis supervisor, who may or may not be the chair of the committee. In practice, students first get into contact with a potential thesis supervisor, and he or she will then help with the composition of the thesis committee.

Completing your graduation project with a host organisation

If you wish to complete your graduation project at an external host organisation, you must obtain the explicit permission of the chair of your thesis committee. Communicate very clearly with the host organisation that it is a thesis project, not an internship. This means that your thesis committee is in the lead to judge the content of your thesis and the level of your research questions and research approach. The host organisation can advise you, but the final decisions of changes during your thesis work need agreement of your thesis committee. Some host organisations will wish to enter into a formal contract with provisions on for instance receiving an allowance. This contract may also include a

confidentiality clause. The organisation may request TU Delft to co-sign the contract. This is not standard practice: the graduation coordinator will assess every case on its merits and, if he considers it appropriate to do so, will arrange the signature from TU Delft for the contract.

Completing your master's thesis project abroad

It is possible to complete your thesis project with a host organisation abroad. A master thesis project abroad demands careful preparation and often takes more time to complete than a project in the Netherlands. In this case too your thesis will be assessed by the thesis committee of the MSc Civil Engineering programme, acting under the overall responsibility of the Board of Examiners of Civil Engineering. It is obvious that one or more of the experts who supervise your project should be included on the thesis committee as external examiners.

B. Start

In this phase, you are expected to deliver the first actual product: the work plan. You will draw up your work plan in close consultation with your thesis supervisor. Your work plan should include at least:

- a problem statement, including the societal and scientific relevance of your research
- a research question or questions
- the planned activities to answer the research questions ("methods")
- a realistic time schedule with firm deadlines that makes allowance for holidays, examination periods, etc.

The Start or "Kick-off" Meeting is the first official meeting of the thesis committee. This should ideally be attended by all members. At this meeting, you will present your work plan for the committee's approval. Please note that major changes to the work plan will need to be approved by the committee.

Once the topic of your thesis project has been established and the thesis committee appointed, your MSc examination programme needs to be approved. This will require you to complete form CIE-2.

C. Execution

In this phase you actually execute the planned activities listed in your work plan. The faculty provides various facilities to assist you in doing so, including rooms and computers. See the checklist for further information.

During this phase there will be at least one and usually more interim meetings with the thesis committee to discuss progress. Unless otherwise agreed, you will draft the agenda and chair these meetings. Furthermore, it is your responsibility to submit the documents to be discussed at least one week in advance to each committee member – as a hard copy if so requested - and to write up a report of the meeting afterwards. This report should be e-mailed to each committee member for approval.

The meetings and further supervision you receive may take different forms.

In case of any disagreement with the thesis committee that cannot be resolved amicably, you should contact your academic counsellor, who will attempt to find a solution. If he or she is unable to do so, the matter will be referred to the Board of Examiners. The board will first attempt to mediate but if this also fails, the board will issue a binding ruling.

If your graduation project takes *longer than one year*, the thesis coordinator is required to investigate the causes for this delay. He will contact both you and the chair of your thesis committee. If it seems likely that the delay will be further protracted, the thesis coordinator will notify the Board of Examiners accordingly. The Board will then require you and the chair of your thesis committee to provide a written explanation. In exceptional cases, the board may rule that the work to date must be assessed immediately as it is. If found insufficient, you will be required to find a new thesis topic and repeat the graduation process.

D. Completion

Green light meeting

The final phase of the graduation process begins with the so-called 'green light meeting'. A week prior to the meeting, you must submit a complete draft of your thesis, including a summary and the conclusions, to each member of the thesis committee. At the meeting, the committee will decide whether you can submit the final version of your thesis for assessment. If so, a date will be set for the final presentation and assessment. Moreover, the committee will decide on any changes that should be made to the draft thesis.

Graduation

It is only possible to graduate if you have fulfilled all other obligations for graduation! You must have completed all your courses successfully. If you take an exam shortly before the final presentation and you fail, the graduation date has to be postponed. You have to apply for graduation in time: see the checklist.

Graduation consists of the final presentation and the final assessment, usually directly after the final presentation. The final presentation is public. It is given to an audience made up of your family and friends, professionals from the field and TU Delft staff and students. It should be understandable for an (intelligent) lay person, but should also be interesting for the experts. You should reserve a room for the final presentation (see the checklist).

The final assessment is made by the thesis committee behind closed doors. You must ensure that all members of the committee have a hard copy of the final version of your thesis well in advance. In addition, you should also upload your thesis onto the repository of the TU Delft library. Article 28 of the Board of Examiners' Regulations and Guidelines contains the official criteria on which you will be assessed. In practice, you are assessed using the following five criteria:

- Scientific approach
- Results
- Behavioural skills, such as independence, initiative and communication
- The report
- Oral presentation

The first two criteria determine about half of the final mark, and the other three the other half. The final mark is expressed as a score out of ten. (Half-marks are possible.)

When the final mark is a 6 or more, you will get your diploma immediately after the final assessment. The Diploma Supplement with all the marks will be sent to you within 20 working days.

You are required to upload the thesis in the repository of the TU Delft library. The only exception is if the host organisation requests an embargo on publication, for example because the thesis contains confidential business information. In such cases, a period is agreed after which the thesis can be published.