Master Thesis (PDM)

Guidelines of the SIE section

Version 1.3

**Versioning**

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<th>Date</th>
<th>Autor</th>
<th>Description</th>
<th>Status</th>
</tr>
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1. SHORT GUIDELINES

Guidelines for the definition and the registration of a PDM. We ask you to follow the sequence of the different steps. The contact with a SIE Professor is essential because he/she will take the academic responsibility for the supervision of your PDM.

2. INTRODUCTION

2.1 Context

This document is intended for students, EPFL professors and companies/universities that host students for their Master's degree project (PDM). It specifies the organisational arrangements for the PDM in accordance with the « Ordonnance sur le contrôle des études menant au bachelor et au Master à l'Ecole polytechnique fédérale de Lausanne » (Ordonnance sur le contrôle des études à l’EPFL ; 414.132.2, chapitre 4)\(^1\)

The Master Thesis is a personal achievement of the student that involves analysis, design and implementation work aimed at proving his/her engineering abilities (in the broadest sense) that can be carried out in an EPFL laboratory, an institution related to EPFL or an external company. The Master Thesis takes place on the dates mentioned in the academic calendar. However, it may begin in the course of a semester to which it will be attached (fall or spring). If enrolled in the spring semester, a Master Thesis must begin between 1\(^{st}\) January and 31\(^{st}\) May. Enrolled in the fall semester, it must begin between 1\(^{st}\) June and 31\(^{st}\) December.

\(^1\) https://www.epfl.ch/about/overview/regulations-and-guidelines/polylex-en/
2.2 Types of Master Thesis

Different types of Master Thesis are proposed with the following rules (duration, agreement, and supervision).

<table>
<thead>
<tr>
<th>Type</th>
<th>Context</th>
<th>Durée [sem.]</th>
<th>Stage</th>
<th>Supervision</th>
<th>Convention</th>
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<tbody>
<tr>
<td>Standard</td>
<td>Dans un labo affilié à SIE</td>
<td>17</td>
<td>Avant PDM</td>
<td>1 prof. SIE</td>
<td>Pas nécessaire</td>
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<tr>
<td>Standard avec coll.</td>
<td>Entre un partenaire externe et</td>
<td>17 – 25</td>
<td>Avant PDM</td>
<td>1 prof. SIE + 1</td>
<td>Recommandée</td>
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<tr>
<td></td>
<td>labo SIE</td>
<td></td>
<td></td>
<td>encadrant externe</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(optionnel)</td>
<td></td>
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<tr>
<td>PDME</td>
<td>En entreprise</td>
<td>25</td>
<td>Intégré</td>
<td>1 prof. SIE + 1</td>
<td>Obligatoire</td>
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<td></td>
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<td></td>
<td>encadrant de l’entreprise</td>
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3. SELECTION AND SUPERVISION

Whatever the type of PDM, the project must be supervised by a faculty member who is a professor or MER in the SIE section. He/she is then responsible for monitoring the PDM and its evaluation. If the project takes place in an external institution, the external partner supervises the student's work and he will be the main contact of the academic supervisor.

3.1 Step by step for the student

The student is free to choose his own academic supervisor who has to agree to take the responsibility.

The Master Thesis topic can be proposed by:

- A laboratory of the Institute of Environmental Engineering (IIE)
  Each laboratory has a page dedicated to projects and all these pages are listed on the Section's website.
- The student in an environmental engineering field via an external institution. Before defining a topic with an external partner, the student must first contact an academic supervisor who will be able to give advice from the beginning and then supervise the work.

Then, the approach implies that: (see summary diagram in chap. 1)

- In all cases, the student discusses the topic and objectives of the Master Thesis with the academic supervisor who must validate them.
- In the case of Master Thesis with an external partner, the academic supervisor must, in addition to the subject and objectives of the Master Theses, validate the host institution and the external supervisor.
- The student then informs the Section of his/her choice of topic and of the supervision.
- In the case of a Master Thesis, a standard agreement, provided by the Section, must be signed between the parties (EPFL supervisor, company, student). The signature of this agreement is optional for a Master Thesis with an external partner, but it is recommended that the essential points (intellectual property, confidentiality) be discussed with the partner before starting the research.
- With the agreement of the Section, he or she can officially register it on IS-Academia.
It is important that the dates are correctly validated because once the registration is made, they can only be changed for good reasons.

Throughout the duration of their Master Thesis and until the grade is registered on IS-Academia, students remain registered as EPFL students and are subject to the rules of the host laboratory or company: timetable, absence, confidentiality, seminars, etc.

3.2 Academic supervisor

The Section's teachers regularly propose Master Thesis topics.

The academic leader is responsible for:

- Proposing topics in his/her field of research and publish them on the laboratory's website.
- Defining the objectives of the Master Thesis with the student interested in a topic.
- Inform the students who wishes to do their Master Thesis with an external partner, giving them advance notice to define the topic and the mode of collaboration.
- Then, reviews the external Master Thesis proposal by verifying the academic component of the topic proposed by the external partner;
- Then, validates the topic by taking academic responsibility for follow-up;
- Instructs the external partner on the requirements needed by EPFL (if necessary, sign an agreement).
- Discusses the confidentiality issues of the Master Thesis and ensures that the clause is included on IS-Academia (see Section 6.3)
- Formally supervises the Master Thesis by regularly monitoring the progress of the work.
- In order to evaluate the student's abilities and the directions taken by the project, he/she requests an interim report/presentation. He or she intervenes in a timely manner with the external manager in case of problems.
- He/she reserves the right to redirect the work in agreement with the external supervisor in order to ensure the academic dimension of the Master Thesis.
- Designates an external expert to EPFL in agreement with the Section Director.
- Organizes the Master Thesis examination.
- Presides over the jury during the Master Thesis examination.
- Writes the evaluation form and send a signed copy to the Section.
- Records the grade on the ISA.

The academic supervisor is a professor/MER attached to the EIS Section. In special cases and with the agreement of the Director of the EIS Section, the academic supervisor may be a professor/MER from outside the EIS Section or an experienced scientific collaborator.

3.3 External partner

The external supervisor has to:

- Welcome the student in the beginning (day one) of the PDM and to give him/her the guidelines and rules of the external institution
- Propose a working environment suitable for the realization of the PDM in the best conditions.
- Supervise regularly the student and to give advice for his/her work progress
- Inform the academic supervisor on the work progress and to communicate as fast as possible in case of problem.
4. ORGANISATION

4.1 Duration

Reminder: the Master Thesis must take place during the two semesters after the successful end of the Master cycle (including internship). It is not recommended to insert a free semester right after the end of the Master cycle because only one Master Thesis tentative will be possible in this period.

The duration of the Master Thesis is 17 weeks if it takes place at EPFL under the supervision of an internal professor or MER. The duration could be extended up to 25 weeks in the following cases:

- The project takes place in another institution (not at EPFL),
- The request must be addressed to the SIE section before the start of the Master Thesis,
- The SIE section agrees on the specific conditions.

The requests for an extension during the Master Thesis will not be considered.

One additional week is inserted if the period of the Master Thesis includes Christmas or Easter time.

4.2 Expenses

Expenses incurred for the implementation of the Master project (chemicals, analyses, software, travel, conferences) are to be charged to the responsible institution/laboratory.

5. WRITING A REPORT

The Master Thesis report is the official document written by the candidate. The academic supervisor and the external expert will receive a copy of the report. The content of the report is structured as follow:

- the title and EPFL logo
- the name of the student
- the name of the EPFL or host laboratory with the logo
- the name of the academic representative
- the name of the representative at the host institution
- the work results with a summary in English and in French
- 5 to 8 key words that characterize the project

This report shall be representative of the work conducted and shall be used to evaluate the student’s engineering capacities.

The content of the Master Thesis and the report belong to the student and the section offers the possibility to value these results by publishing them on the SIE web page and/or in the EPFL Infoscience publications directory. Such a publication must be made with the agreement of the student.

The section encourages the student, in agreement with his or her supervisor, to value the results of the PDM in the form of a technical/scientific article or a communication.
6. END OF THE MASTER THESIS

6.1 For the student

The student sends an electronic version in PDF format by email to christina.treier@epfl.ch, to the academic leader and to the expert within the deadline set until 12:00 (Swiss local time). Any project submitted after the deadline will give the NA assessment. The PDF document is simultaneously uploaded to IS Academia in the Master Thesis portal, except if the work is considered confidential. Note that when the PDF is uploaded to IS-Academia, the document is automatically submitted to a tool for the plagiarism rate.

If required by the academic supervisor and the expert, the student prints and binds a hard copy and sends it to these 2 people (no paper version required for the Section).

For the oral examination, the student prepares a presentation of his Master's project. As an indication, the examination lasts about one hour: presentation of the student (20 to 30 minutes maximum), questions from the jury (25 minutes), and deliberation (5 minutes).

6.2 Academic supervisor

- He or she evaluates the work together with the external expert with regards to: a) work quality, b) report quality, c) quality of the oral presentation
- He or she is filling the PDM evaluation protocol (available on the SIE website).
- He or she inserts the grade directly into the ISA platform, after the oral defense if the exam is passed.
- If the quality of the writing is judged insufficient, the academic supervisor may require the student to correct it within two weeks of the oral presentation. In this case, the grade is not changed because it is given directly after the exam.
- In case of failure, a new Master Thesis must be presented the following semester.
- The Section recommends that the jury clearly notify the candidate of any deficiencies.

6.3 Confidentiality

In the course of conducting the Master Thesis, some of the data used, as well as the results, may be confidential. In this case, the host unit must inform the SIE Section, and if necessary, it can request that a confidentiality contract be drawn up between the different parties. The student must then indicate on IS-Academia whether or not his/her subject is confidential, which is validated by the academic supervisor. With such a status, the Master Thesis report can be classified as "confidential" and the parties involved commit themselves to respecting this clause.

This confidentiality clause must remain exceptional because EPFL encourages open and non-confidential scientific publications. It is not a unilateral decision, especially coming from the external partner.