

# SIE – MASTER THESIS & INTERNSHIPS

Meeting: 12 november 2024

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SIE Section

# Agenda

- **Master Thesis (PDM)**
  - Context
  - How to proceed
  - Types of PDM, timeline
  - Research topics
- **Internship**
  - Goals, directive
  - Where and how long
  - How to proceed
  - Agreement, ISA status
- Questions





A scenic view of a snow-capped mountain range at sunset or sunrise. The sky is a warm, golden-orange color, and the mountains are illuminated from the side, highlighting their peaks and ridges. In the foreground, the dark silhouettes of evergreen trees are visible against the lower part of the sky.

Master Thesis (PDM)

A unique occasion to tackle  
an academic challenge

# Master Thesis (PDM) - Context

- Conditions



- To succeed in the Master cycle (90 cr.)
- To have achieved the internship (except for PDME)
- The duration of the PDM is one full semester (30 credits)
- The PDM must be **achieved within 1 year** right after the end of the Master cycle
- Conditional admission: not more than **8 missing credits**
  - Must be an exception

## EPFL Directives:

- Education (414.132.3)
- «Contrôle des études» (414.132.2)
- <https://www.epfl.ch/education/studies/reglement-et-procedure/pdm/>

# Master Thesis (PDM) - Context

- Fundamental principles

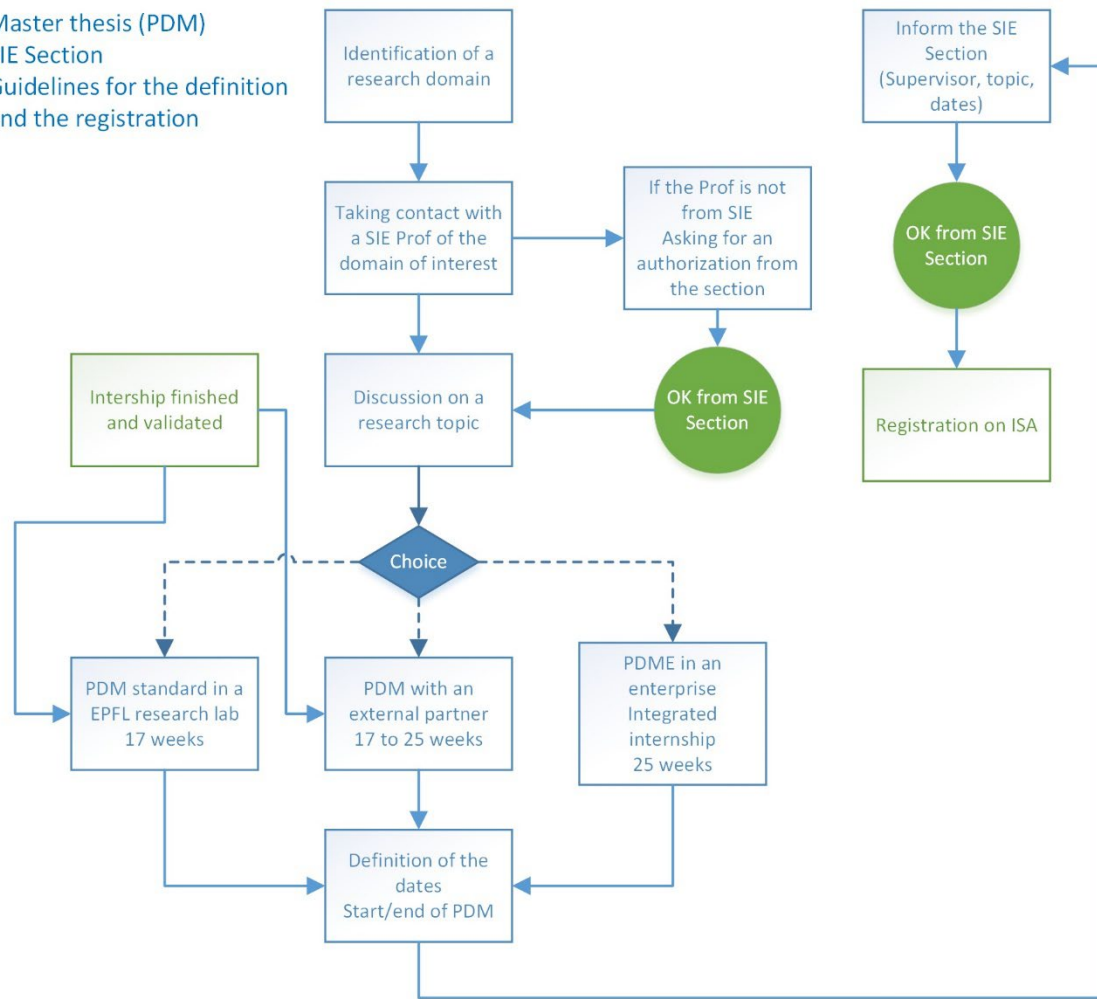
- The PDM is a research academic work
- The topic must be discussed and **accepted by a SIE professor** (or MER), as well as the **Section Head**
- The Prof or MER is in charge of the main supervision of the PDM
- The assessment of the PDM is done during an oral exam led by a professor (main supervisor) and an expert.

The PDM is a unique occasion to organize your own research project in a fully autonomous way.

# How to proceed?

See: guidelines on SIE web pages  
And Moodle pages  
<https://moodle.epfl.ch/course/view.php?id=18315>

Master thesis (PDM)  
SIE Section  
Guidelines for the definition and the registration



# Master Thesis (PDM)- How to proceed

- PDM standard (SIE Lab)
  - Identify your own research interest
  - Search for internal competences (academic supervision)
  - Discuss with professors of the research domain
    - Optional: search for an external partner
  - Define the research topic
    - Title; goals; content, methodology
  - Define the supervision (Prof + co-supervisor)
  - Communicate your choice to the Section
    - Then the Section **will give the green light**
  - Register your PDM on ISA
    - Deadline: same as for courses (two weeks after the semester start)  
Even if the starting date of your PDM is later



# Master Thesis (PDM)- How to proceed

- PDM in the industry (PDME)
  - No initiative with an external partner without a preliminary **discussion with an SIE Professor**
    - The Professor must contact the external partner
  - Discussion on the conditions for a PDME
    - Role of the company and the external supervisor
    - PDME agreement (EPFL- Company - Student)
      - Hosting by the company, mode of supervision
      - Confidentiality: data/documents from the company, PDM report
      - Intellectual property

Are you interested in a PDME? Please ask the Section



# Master Thesis (PDM)- How to proceed

- PDM in the industry (PDME)
- Types of partners: OK
  - Engineering comp., consultant
  - Public Administrations and institutions
  - Industry, start-up
  - EPF Research Institutes : EAWAG, WSL, PSI, EMPA
    - Mandatory agreement of the Section
- Types of partners: NON OK
  - Foundation
  - Non-profit association

# Master Thesis (PDM) - How to proceed

- Standard PDM with an external partner
  - Internship (STAP) done and validated on ISA
  - Duration: from 17 to 25 weeks
  - Agreement is not mandatory; to be clarified with the Section
- PDME: PDM within a company
  - The internship is included
  - Duration: 25 weeks
  - Agreement is mandatory

# Master Thesis (PDM) - Summary

Type	Context	Duration [weeks]	Internship	Supervision	Agreement
<b>Standard</b>	Hosted by a SIE research lab	17	Before the PDM	1 SIE prof.	Not required
<b>Standard with an external partner</b>	Lab + external partner	17 – 25	Before the PDM	1 SIE prof.+ 1 external supervisor (option)	Recommended
<b>PDME</b>	With the industry	25	Integrated	1 SIE prof.+ 1 external supervisor from the company	Mandatory

<https://www.epfl.ch/schools/enac/education/environmental-sciences-and-engineering/fr/sie-bienvenue/formation/master/projet-de-master/>

# Master Thesis (PDM) - Timeline

- Timeline

- ISA Platform

- You have to register on ISA at the latest two weeks after the start of the semester
  - Even if your PDM starts later during the semester

- Start/end : flexible dates

- Spring semester: between 1st January and 31st May
- Fall semester: between 1st June and 31st December
- Start on Monday and end on Friday at 12:00 (Swiss time)
- Please validate your dates with the Section, before ISA registration
- Once the dates are scheduled, no possibility to change them anymore

- See: <https://www.epfl.ch/education/studies/reglement-et-procedure/pdm>

# Master Thesis (PDM) - Research

- Research topics

- Sources of inspiration

- IIE Institut (Environment)

- Some research labs in civil engineering

- ETH Research Institutes (EAWAG, WSL, PSI, EMPA)

- Visit IIE web pages

- ...express your interest for some research fields

- ...get in touch

<https://www.epfl.ch/schools/enac/research/environmental-engineering-institute-iie/>



An aerial photograph of a lush green landscape. The terrain is covered in dense, vibrant green vegetation, likely a forest or a large park. The landscape is characterized by numerous winding, light-colored paths or roads that meander through the greenery. Several small, irregularly shaped blue ponds or streams are scattered throughout the scene, reflecting the sky. The overall impression is one of a natural, serene environment.

Internships

Immersion in the  
professional world

# Internships

- Principle
  - The internship is part of the EPFL Master programs
  - It can be done: after the end of the Bachelor, during the master cycle or right before the master thesis
  - It must be achieved before starting the master thesis
- Goals
  - immersion in the professional world
  - Working in teams
  - Be aware of the work organization of a company
  - Be exposed to the requirements of engineering projects

# Internships

- Duration: min 8 weeks – max 6 months

- *Règlement d'études SIE (only in French)*

*Les étudiant·e·s doivent effectuer un stage d'ingénieur d'une durée **minimale de 8 semaines et maximale de 6 mois** entre la fin du cycle Bachelor et le début du projet de Master. La réalisation d'un projet de Master de 25 semaines en entreprise dispense cependant les étudiant·e·s de cette obligation.*

SIE web pages:

<https://www.epfl.ch/schools/enac/education/fr/sciences-et-ingenierie-de-lenvironnement/master-sie-fr/stage-dingenieur/>

# Internships

- Companies: OK

- Engineering comp., consultant
- Public Administrations and institutions
- Industry, start-up
- EPF Research Institutes : EAWAG, WSL, PSI, EMPA
  - A practical work of the internship is required and if possible a collaboration with external partners
  - Mandatory agreement of the Section

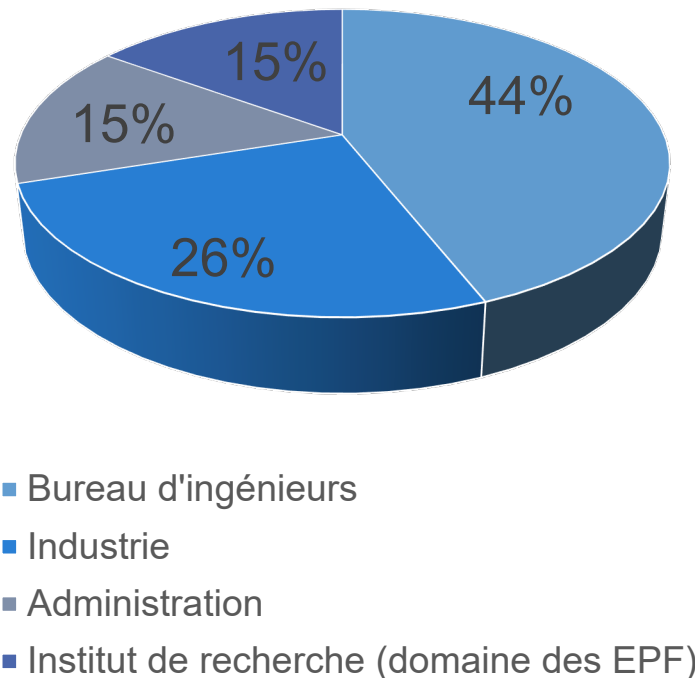
- Companies: NON OK

- Universities
- Research Centers
- NGO
- Public institutions with a direct link with a University
- Foundations
- Associations

# Internships

- Where & How long
- **2023** – Duration
  - 2 months: 3 %
  - 3-5 months : 41 %
  - 6 months : 56 %

SIE Internships 2023 - Domains





# Internships

- How to proceed
  - Identify a professional domain of interest
  - Search for companies involved in this domain
    - Have a look at the SIE list of completed internships
  - Send your CV and letter of motivation to companies
    - Communicate your internship opportunity to the Section (> Green light)
    - Register your proposal on ISA
  - ...or search for a proposal on **EPFL internships platform**
  - If the answer is positive
    - Communicate with the internship **coordinator** (SIE Section)
    - Search for an internal **supervisor** (SIE teacher)
      - The supervisor must not necessarily be an expert in the internship's domain
    - **Complete the agreement:** to be signed by the internal supervisor, the company and the student; before the beginning of the internship
    - Upload your signed agreement on ISA and send a copy to the Section

# Internships

- Agreement


- Three parties: Student – Company – EPFL
  - EPFL: supervisor = teacher from SIE or ENAC
  - Company: supervisor in charge of your coaching
- Agreement between student and company
  - Roles, liability, insurance
  - Title and content of the work
  - Supervision/coaching
  - Confidentiality
  - Intellectual property
  - Salary



# Internships

- **Your status on ISA**
  - 8 weeks during the summer period (out of semesters)  
Nothing to do on ISA
  - During the semester: status «stage»
    - Reduced fees; no possibility to attend courses
    - It does not count for the Master cycle's duration
  - Doing a second internship (your own initiative): status «congé»
    - This semester counts in the duration of the Master cycle
  - If the internship is done after the Master cycle, **it is mandatory to start the Master thesis right after**
  - If the internship is done after the Bachelor cycle, you have to select status «stage» for the next semester.

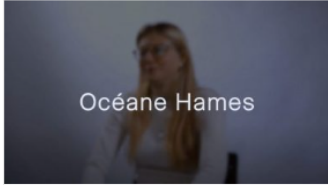
# Students Interviews



Valérie Zermatten

## Valérie Zermatten

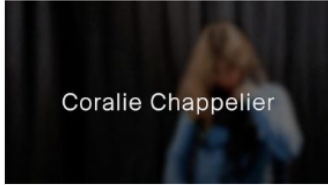
« L'intelligence artificielle, ou le « deep learning », s'utilise de plus en plus dans l'analyse d'images en automatisant certaines tâches pénibles sans supprimer le travail humain, mais en le facilitant. »



Océane Hames

## Océane Hames

« Ces changements dans les zones polaires ont un impact sur le climat global. En les modélisant avec précision, on espère de mieux comprendre ce qui pourrait changer dans le futur »



Coralie Chappelier

## Coralie Chappelier

« A terme, il est intéressant de savoir comment des bactéries dans les écosystèmes aquatiques vont évoluer avec le changement climatique, et en particulier celles qui peuvent intoxiquer des animaux comme les chiens ».

- <https://www.epfl.ch/schools/enac/education/environmental-sciences-and-engineering/fr/sie-bienvenue/etudier-lenvironnement/temoignages-detudiants/>

# QUESTIONS

<https://stages.epfl.ch/>

**SECTION DES SCIENCES ET  
INGÉNIERIE DE L'ENVIRONNEMENT**

