# EPFL- Quantum Science & Engineering Internships
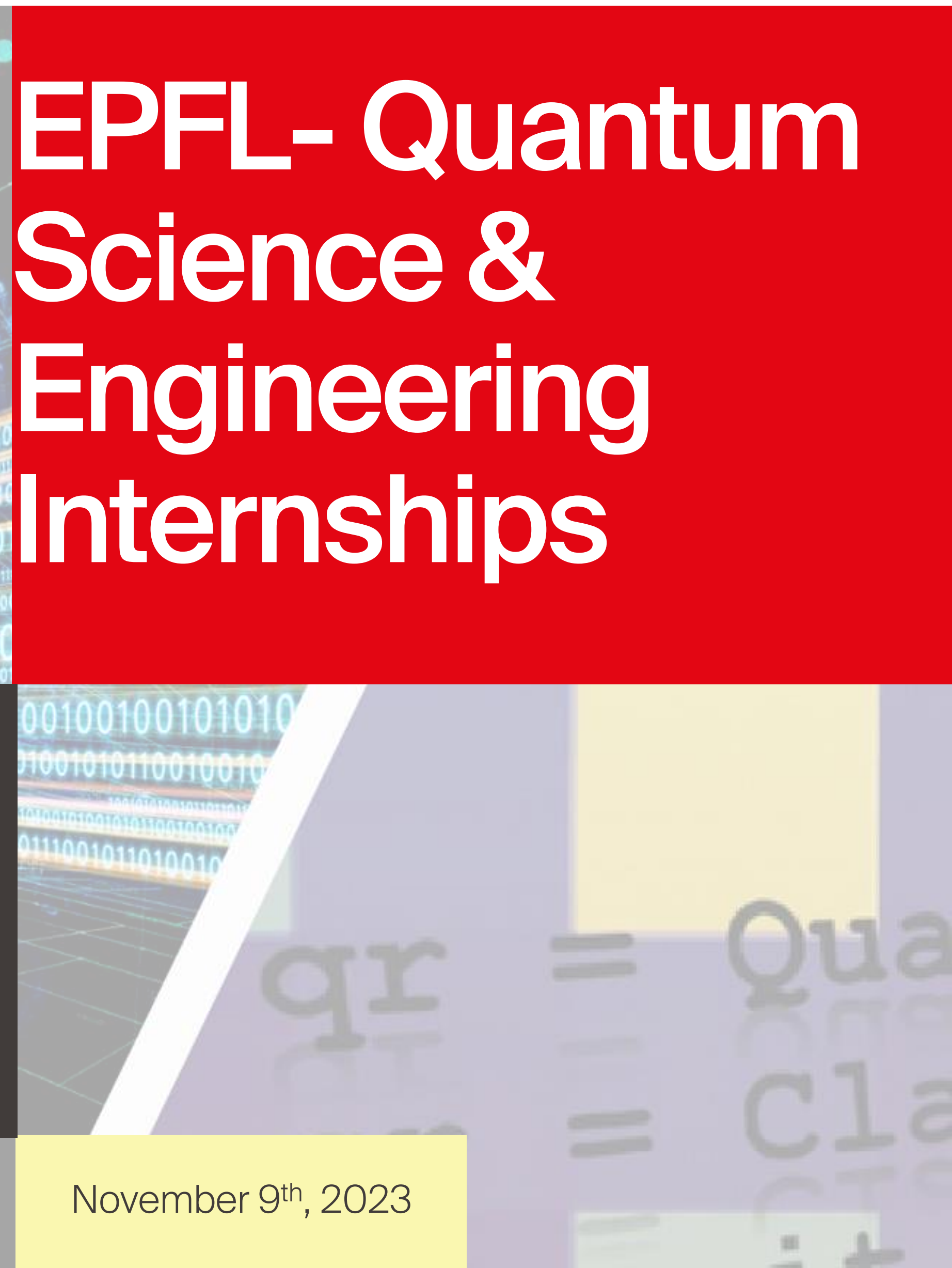
**Hind Klinke**

Section deputy SIQ

Internship coordinator

November 9th, 2023

École polytechnique fédérale de Lausanne

# The internship:
# Excellent Opportunity !!!

❑ Students
- **A Great incentive to ask oneself the right questions !**
- Familiarize with working life
- Immerse into Industry practice
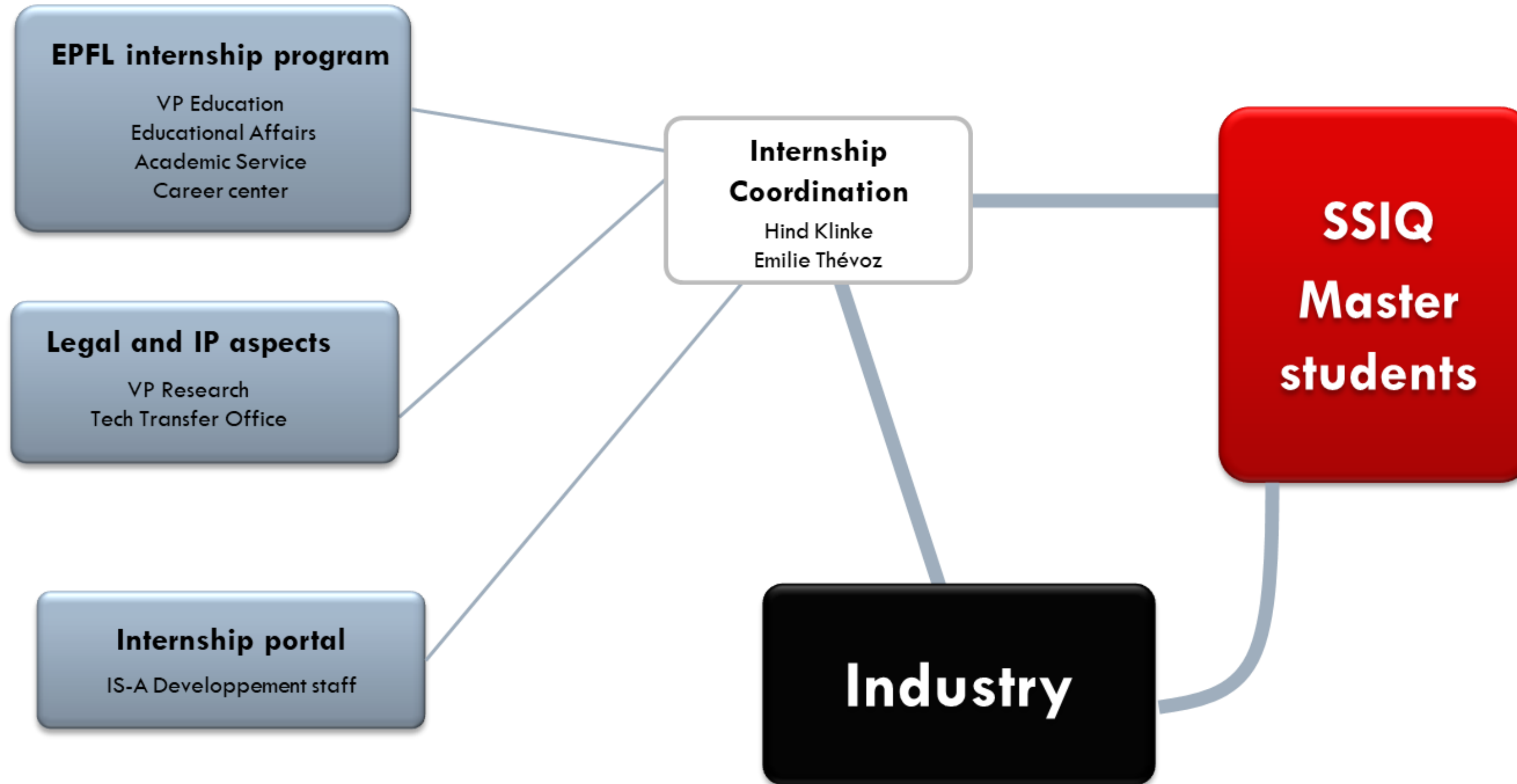- Future Hiring opportunity

❑ Companies
- Benefit from highly qualified students
- A new insight on current issues, innovate !
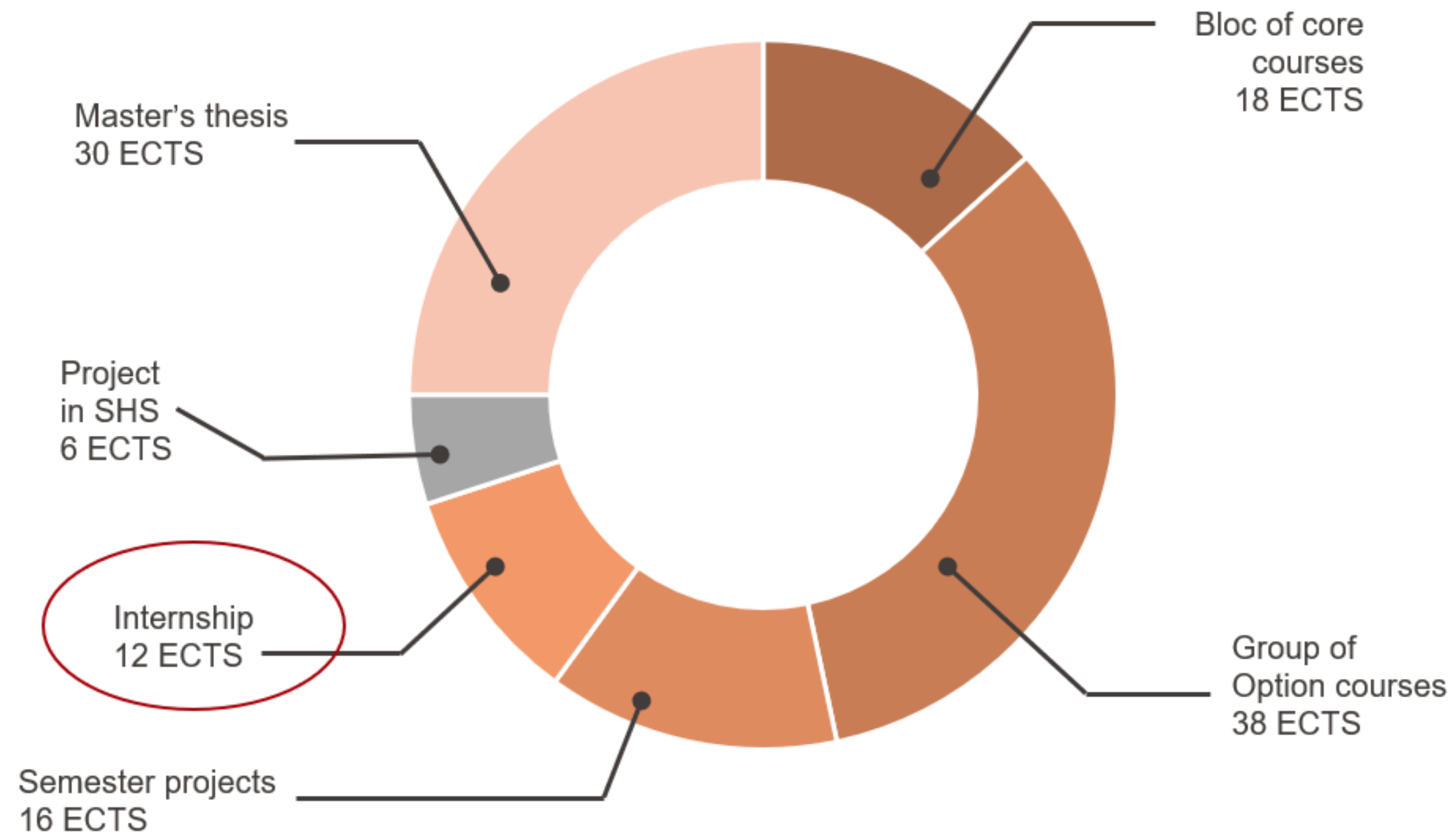- Evaluate futur employees

❑ EPFL
- A direct link to industry
- A new platform to start collaborations on the research level
- Feedback from industry to improve the education of our students

# Internship Coordination

# Internship obligation

- The Internship in industry is a mandatory step of the Master degree
- Possible format to validate this obligation:
  - **SCS**: Stage à Crédits Séparés



Bloc of core courses 18 ECTS

Master's thesis 30 ECTS

Project in SHS 6 ECTS

Internship 12 ECTS

Semester projects 16 ECTS

Group of Option courses 38 ECTS

Internships info session

# Internship criteria's

- Minimum duration of **2 month**, up to **6 months**
- Immersion into industry
- Familiarize with company processes
- Acquire specific competences
- Apply transversal skills
- Evaluation form by student and industry supervisor

# When to place your internship?



Summer  Fall  Spring  Summer  Fall  Spring  Summer  Fall

MA1, MA2
60 credits

Internship
8 weeks

MA3
30 credits

PDM in **academia**
17 weeks
30 credits

MA1, MA2
60 credits

MA3
30 credits

Internship
8 weeks

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17 weeks
30 credits
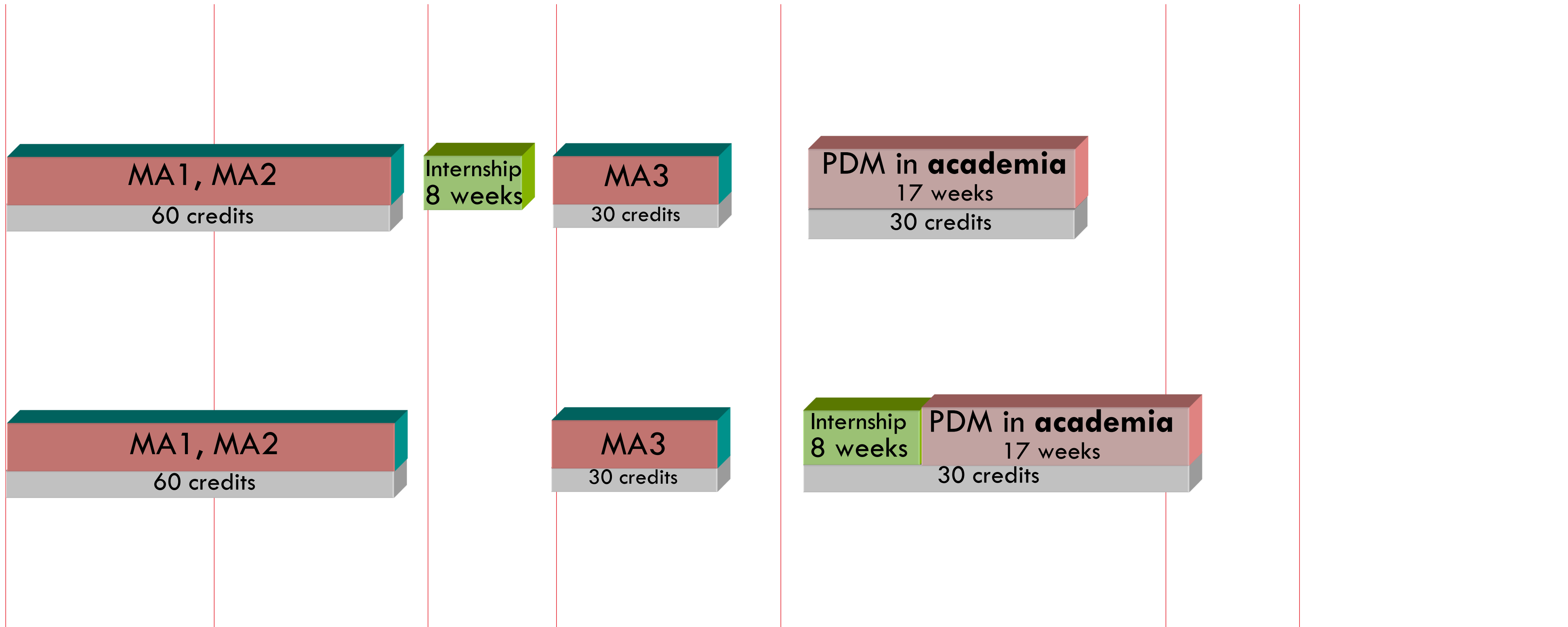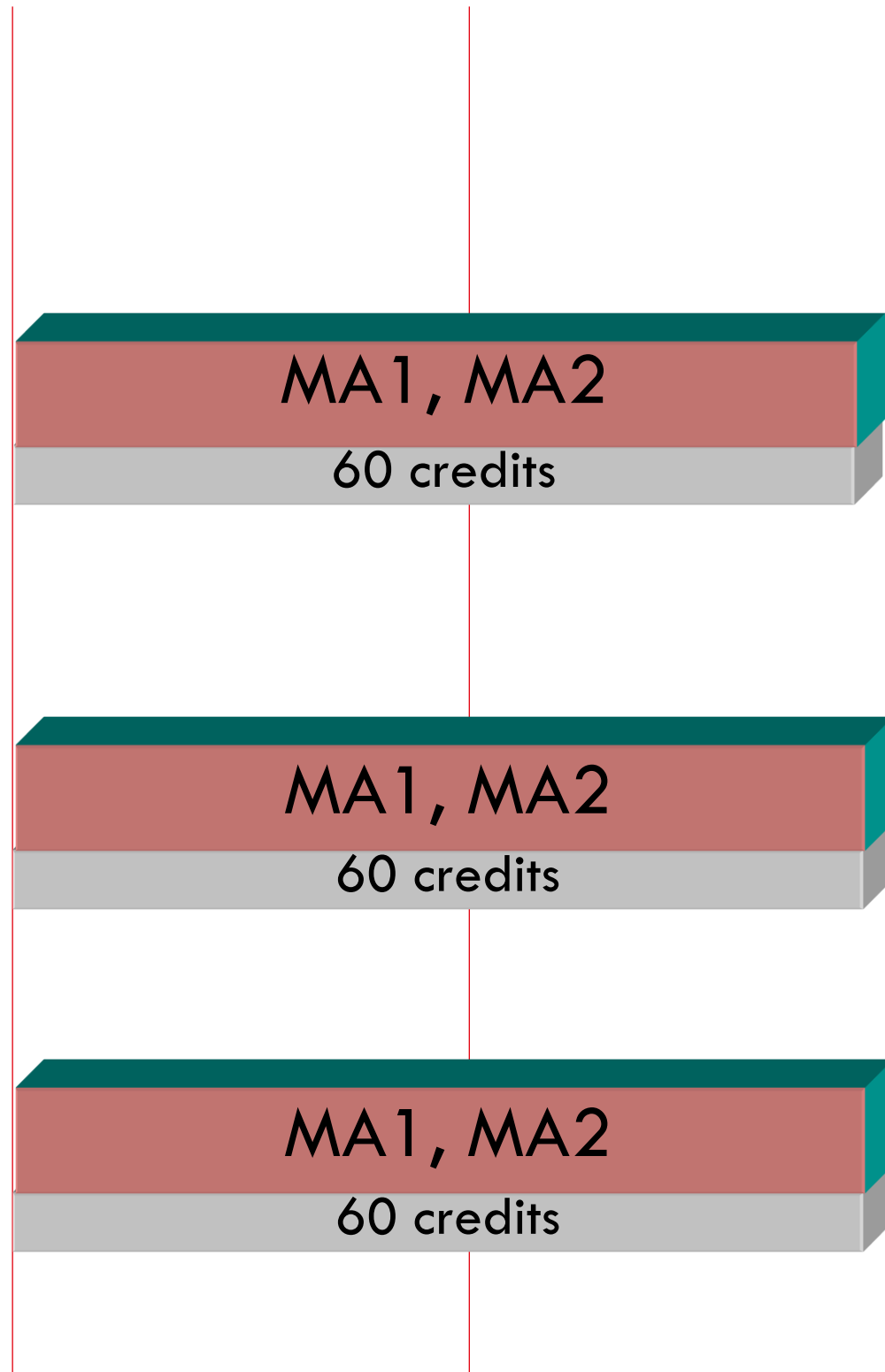
PDM in academia in foreign Universities: 25 weeks

# When to place your internship?



Summer Fall Spring Summer Fall Spring Summer Fall

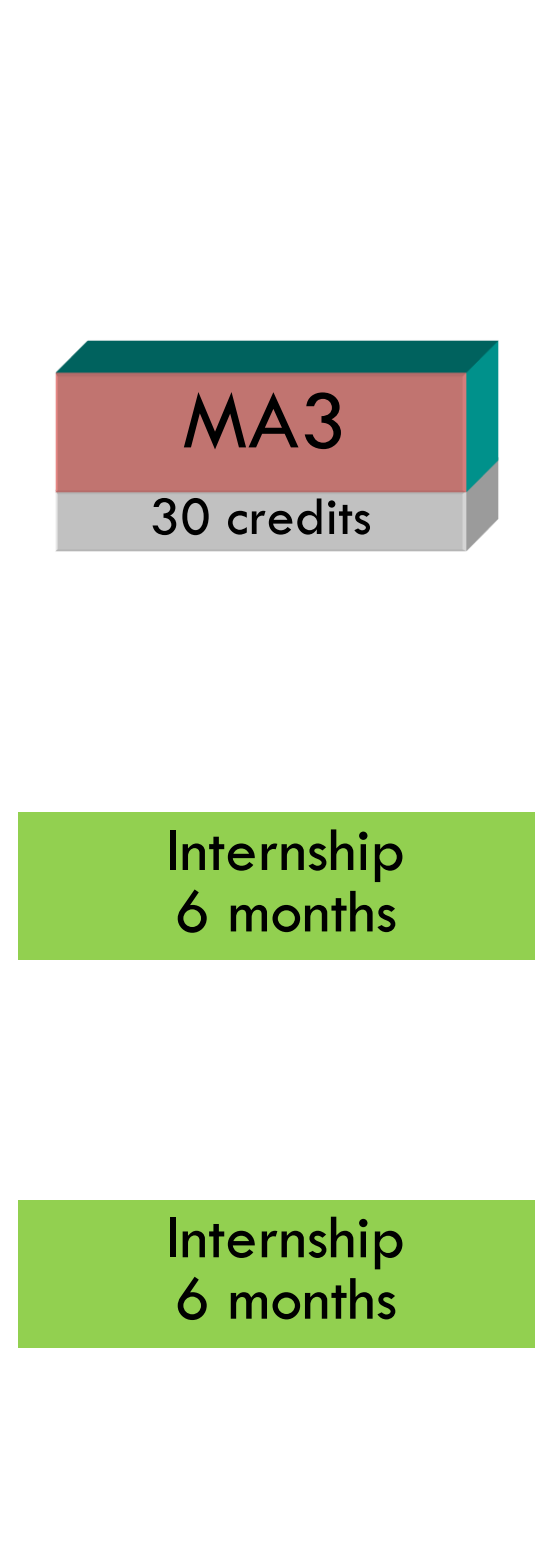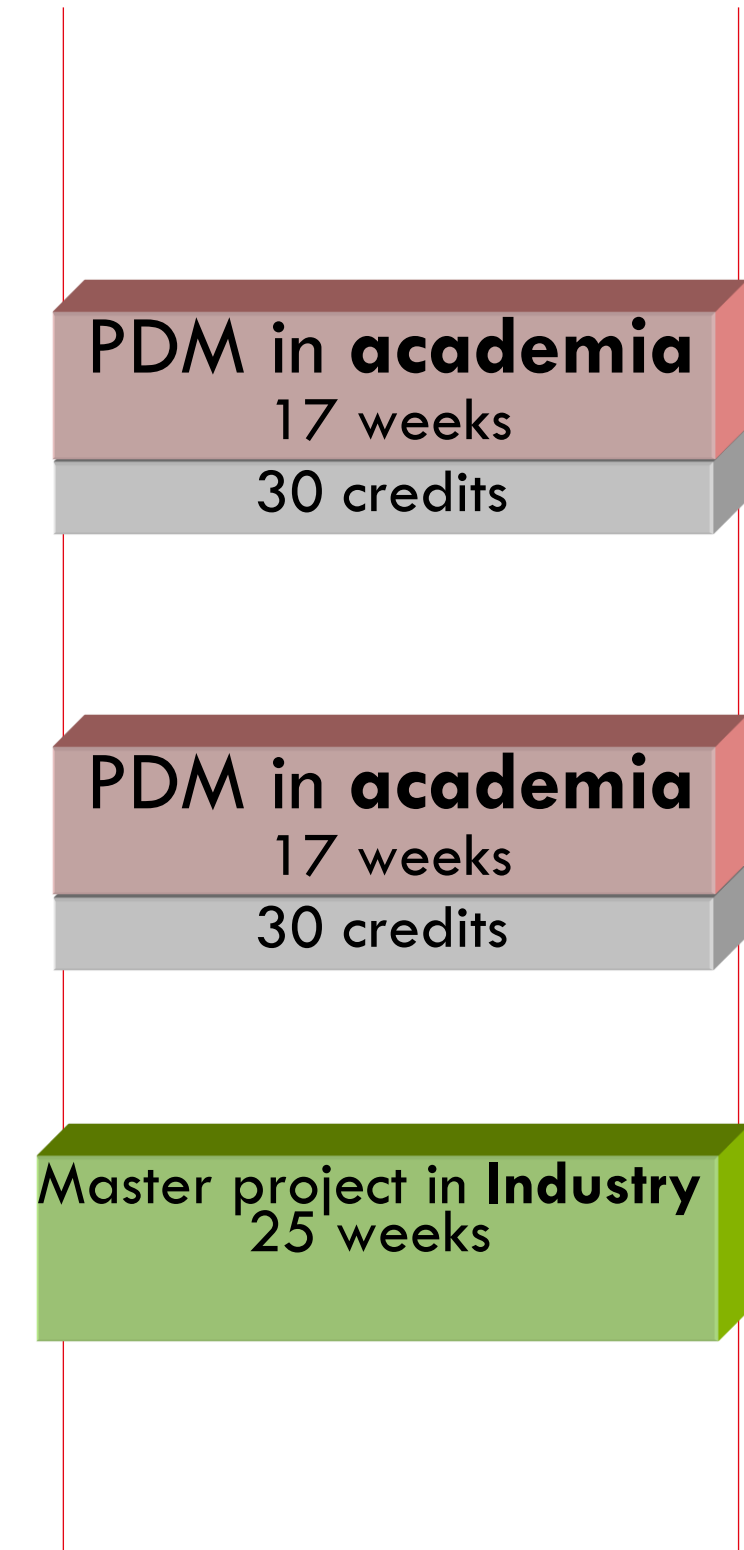| | | | | | | |
|---|---|---|---|---|---|---|
| MA1, MA2 — 60 credits | | Internship 6 months | MA3 — 30 credits | | PDM in **academia** — 17 weeks — 30 credits | |
| MA1, MA2 — 60 credits | | MA3 — 30 credits | Internship 6 months | | PDM in **academia** — 17 weeks — 30 credits | |
| MA1, MA2 — 60 credits | | MA3 — 30 credits | Internship 6 months | | Master project in **Industry** — 25 weeks | |
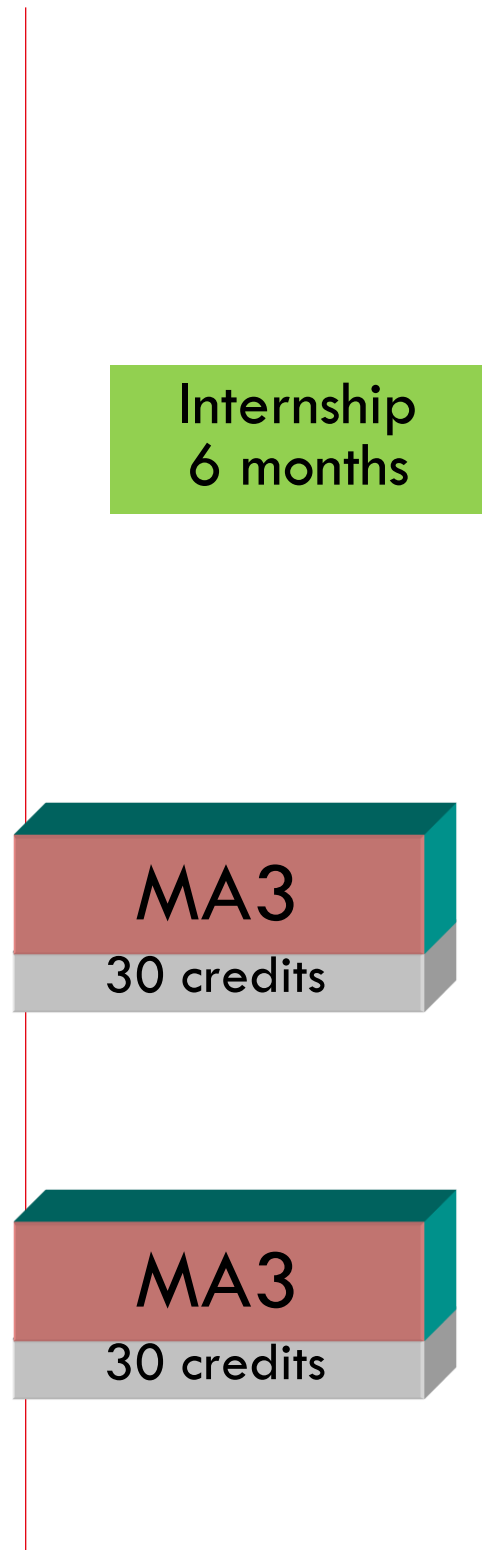
PDM in academia in foreign Universities: 25 weeks

# What is considered «Industry» ?

- Every company or start-up offering a workplace outside of an EPFL laboratory

- Every Research Organisation not delivering academic credits

# How much salary ?

- There is no official regulation in Switzerland to pay a monthly salary for an internship.

- Salaries are mostly ruled by offer and demand

- Often the salary is dependent of the company's size and status

- EPFL recommends a typical monthly salary around **2'000 SFr**. However, there is no obligation of the company to comply with this.

- In Case of a Master Project in Industry, remuneration can be handled more freely (no monthly salary, compensations, bonus at the end, …)

# Internships outside Switzerland

Some recommendations for an internship abroad:

https://www.epfl.ch/campus/security-safety/en/security/travels-abroad/plan/

# Work authorization

- The federal council allows foreign students of Swiss academic institution to perform a mandatory internship during their studies: https://www.admin.ch/opc/fr/classifiedcompilation/20070993/index.html#a39

- Students with Non-EU/EFTA passports require a valid work authorization to do their internship or Master project with monthly salary in Switzerland or EU countries.

- EU students performing a 3-6 month internship have to be simply announced at the cantonal office

- It is the company's responsibility to request this authorization at the proper working office of their canton/country (Link to obtain a mandatory internship certificate.)

- It requires up to 8 weeks to obtain this authorization from the cantonal offices.

- We recommend that students from non-EU/EFTA countries inform the companies in their motivation letter of these regulations.

*Example: "As I'm a non-EU/EFTA resident, your company would be required to ask for a temporary work authorization. Please be advised that the federal council allows foreign students of Swiss academic institution to perform a mandatory internship during their studies: https://www.admin.ch/opc/fr/classified-compilation/20070993/index.html#a39. As I will stay registered at EPFL during this internship, and since this internship is a mandatory part of my Master education, the delivery of this document does not fall into the quota limitation of each canton and is therefore straightforward".*

# How can you find an internship ?

- It is the student's responsibility to find an appropriate internship to validate his Master degree.

- No responsibility can be taken from EPFL side if no internship has been found by the student.

- The student can find an internship position by himself, but the subject needs to be approved by the section deputy.

- EPFL offers an internship portal on which students can find an alternative to their personal quest for finding an internship.

- Access to the **EPFL portal** is given through the student's **IS-Academia account**

# Sustainable Internships

## How to identify them ?

Company submissions are listed on the internship portal once validated by each section. Internships with a sustainability label will be identifiable with the following logo:

## Evaluation report

The evaluation process of the internship is similar to a regular internship but the student is asked to write a **half-page report** to comment if the sustainability goals have been reached. This report does not influence the validation of the internship for the master curriculum.

| | | | | |
|---|---|---|---|---|
| Optimisation du potentiel énergétique d'une installation de traitement des granulats | 03.10.2022 | Holcim (Suisse) SA | Aigle | ● |
| Multi-Frequency, Multi-Modal transduction of Piezoelectric Micromachined Ultrasonic Transducers (PMUTs). | 03.10.2022 | IMEC | Leuven, Belgium | |
| Aerospace smart sensors - R&D embedded software developer | 03.10.2022 | Meggitt SA | Fribourg | |
| Comparing NTA/IDS(Suricata+QosmosDPI, nProbe Cento+nDPI, Mellanox/Nvidia @BF2 ARM AR QosmosDPI) Solutions @100Gbps | 02.10.2022 | Universitaet Bern | Bern 3012, HochSchulStrasse 6 | |
| Simulation Based Aerodynamic Performance Evaluation | 30.09.2022 | Sauber Motorsport AG | Hinwil, Switzerland | |
| L'exploitation optimale des installations techniques dans l'environnement bâti | 30.09.2022 | energo | Lausanne | ● |

# Some opportunities for finding an internship

- Personal contacts, family, friends
- Topic related agencies and organizations
- International platforms
- Company websites



Every Internship found outside the IS-A portal has to be approved by your section. Please send a short but detailed description to the section deputy as soon as you have found an opportunity

H. Klinke

■ Internships info session

# EPFL Career Center workshops

Internships info session

Dear student, Dear doctoral student,

**ORACLE** invites you to join them for an exclusive insight into Oracle Labs and for an overview of their internship opportunities on **Wednesday, 25 October 2023 à 5.15 p.m. in** Room BC410 .

**1. <u>ORACLE Labs</u> Presentation & Tech Talk (open to all): from 5.15 p.m. to 6.15 p.m.**

Oracle Labs is Oracle research center where most of Oracle innovation take place. The research areas span most fields of computer science. This presentation's journey will walk through some areas of Oracle research and development: Generative AI and data science - Data processing as graphs - Compiler graphs- Compilations for cloud native. Join us to discuss those topics with Oracle core engineers!

In the ever-evolving landscape of machine learning, Generative Artificial Intelligence has emerged as a game-changer technology for our everyday and professional lives. In this talk, they'll explore how large language models (LLMs) are transforming software development and data science at Oracle, by assisting developers via code generation, process acceleration and quality assurance.

*>> More about Oracle's Presentation here.*

*>> Biography of Oracle's speakers here: Giulia Carocari, Arnaud Delamare, Boris Spasojevic, Martijn Dwars.*

>> References:

- Oracle Labs :  https://labs.oracle.com/
- GraalVM : https://www.graalvm.org/

https://www.epfl.ch/about/recruiting/career-center/

# How does the internship portal work ?

- Browse through the internship offers of your Master program

- Apply for a position by uploading 2 mandatory documents:
    - CV
    - motivation letter

- Applications are sent on a weekly basis to the companies (**every Monday 14h00**)

- Wait for the company to make its selection process (up to several weeks)

- If no response after 2 months, contact your internship coordinator

- You will be contacted by the company if your application was successful (Most selection processes involve an interview and several e-mail exchanges)

- You MUST accept only one offer and reject all the others within the next 3 working days.
    - No withdrawal from the accepted position!
    - Kindly notify all other companies you had privileged contact with

- Do not use the portal for personal internship search

- Apply always through the portal for mandatory internship

Internships info session

# Some advice to prepare your application documents

- **2 important documents**
  - Motivation letter
  - Curriculum vitae (CV)

The criteria for interview selection by the company is mostly based in these documents. Reference letters can be added as well. Your motivation letter should specifically address the company and the proposed subject

- **Language** : you should use the language of the offer

- **To be avoided:**
  - No motivation letter
  - copy-paste errors
  - Wrong addressing

# Interview

Most companies would like to meet the students for an interview prior to making their final choice

- Be prepared for the interview and demonstrate a professional attitude.
- **Non EU/EFTA students**: Inform the company about the required work authorization
- If the living allowance is mentioned in the description, do not bargain. If not mentioned, inquire for it.
- Follow up: After the interview, write a short e-mail as feedback of your interview to the company.

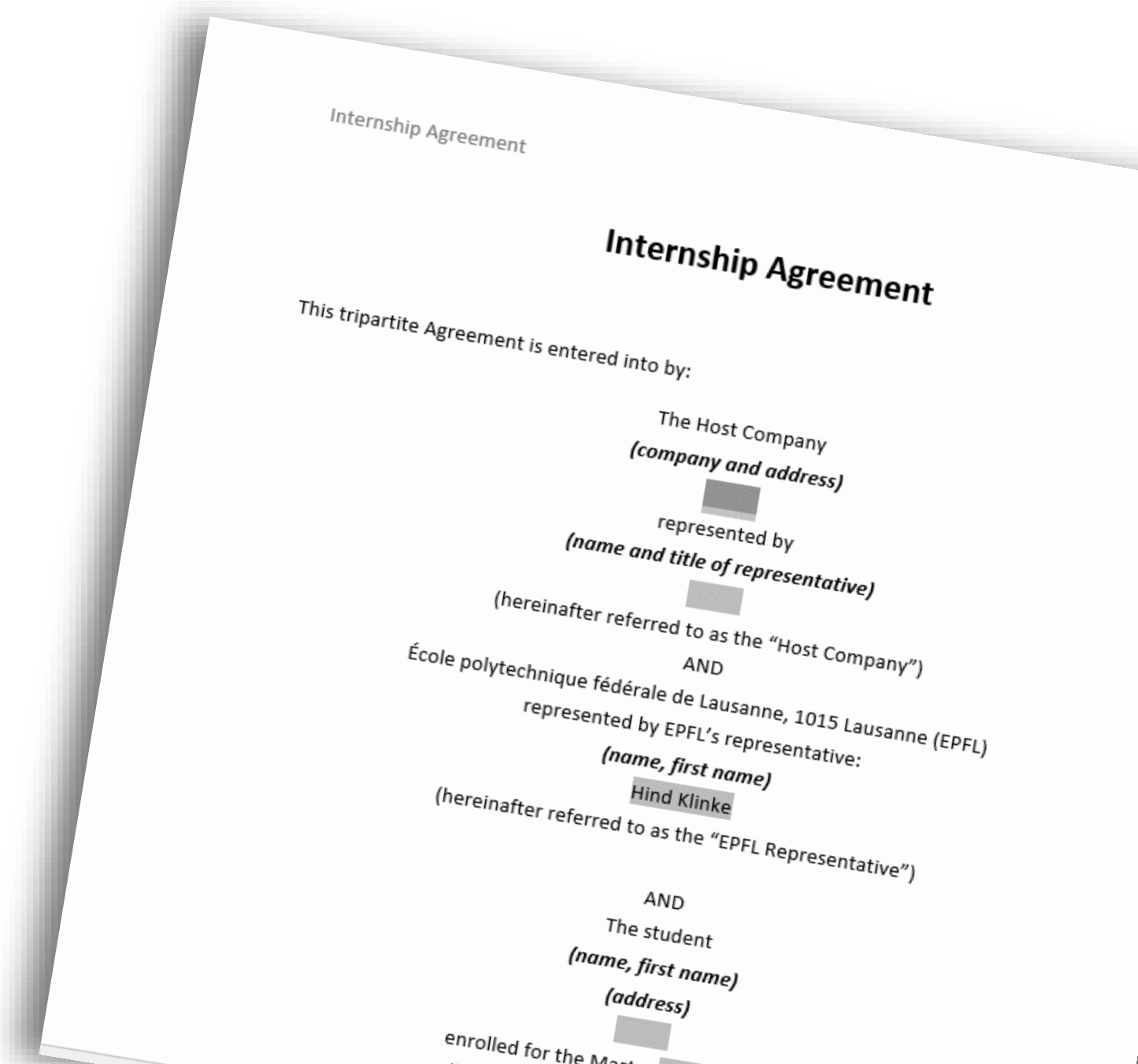# Prepare your internship campaign !

- EPFL proposes 5 modules of 1h45:

  - Understanding and convincing recruiters
  - The CV sections
  - The motivation letter
  - The Job interview
  - Communication and organization at work

Each course will be given in English.

Information and mandatory registration here: https://epflcareer.ch/en/

# Internship agreement

- The internship agreement specifies the commitments and responsibilities of EPFL, the company and the internship student.

- This agreement must be signed for all engineering internships.

- No other tripartite agreement involving EPFL will be signed by the section.

- Alternative contract proposed by the company and signed only by the student are acceptable in some cases, but the students must carefully read and comply with the content (IP issues, confidentiality, insurances and especially non-competition clauses).

- The company must accept to fill out the EPFL evaluation report at the end

Internship Agreement

**Internship Agreement**

This tripartite Agreement is entered into by:

The Host Company
*(company and address)*

represented by
*(name and title of representative)*

(hereinafter referred to as the "Host Company")

AND

École polytechnique fédérale de Lausanne, 1015 Lausanne (EPFL)
represented by EPFL's representative:
*(name, first name)*

Hind Klinke

(hereinafter referred to as the "EPFL Representative")

AND

The student
*(name, first name)*
*(address)*

enrolled for the Mast

# Mandatory: Register internships on ISA

- Submit a short but detailed description of your internship to SNX

- Once you have signed the tripartite internship agreement, enter your project details on the internship portal by creating a new internship proposal, and upload a pdf copy of the agreement.

# Update your FRAC

In case your internship is done during an academic semester, make sure to update your **FRAC** according to your status:

- Semester: (choose the right one: MA1; MA2; MA3)
- Status : Internship (authorized by the section)
- Mention in the comments « SCS»

▪ If you take courses in parallel to your internship, your FRAC status should be «present»

# Anticipate !

- A change of residence or relocation might be necessary

- Time consuming formalities might be required:
  - Confirm an internship
  - Visa, Work authorization and Residence permit (typically 4-8 weeks)
  - Collection of the signatures of the internship agreement
  - New validation of your passport
  - …

- It is your responsibility to settle these formalities prior to the Internship beginning

# During and after the internship

- In case of problems (accident or illness, personal problems, conflict with supervisors, ...), contact urgently SNX

- No written report of the student is requested by EPFL, but can be requested by the company.

- To validate your internship, an evaluation form has to be filled out by the student and the supervisor in the company (sent out 2 weeks prior to ending).

# Evaluation form

The evaluation is more focused on the soft skills than technical knowledge

Application of scientific and technical knowledge

Planning and management of work tasks

Integration in the professional world

Communication

Independence

|  | E | G | S | I | N | Comments |
|---|---|---|---|---|---|---|
| **Application of scientific and technical knowledge** | | | | | | |
| Technical skills and knowledge | | | | | | |
| Ability to resolve complex problems | | | | | | |
| Mastery of domain-specific methodologies | | | | | | |
| **Planning and management of work tasks** | | | | | | |
| Definition of work objectives and management of priorities | | | | | | |
| Evaluation of resources required | | | | | | |
| Work planning, monitoring of activities, and management of emergent issues | | | | | | |
| **Integration in the professional world** | | | | | | |
| Respect for the organizations procedures/ rules and for their profession's ethical codes | | | | | | |
| Capacity to work in teams | | | | | | |
| Quality of the work delivered | | | | | | |
| **Communication** | | | | | | |
| Written communication (structure, clarity, coherence of reasoning) | | | | | | |
| Oral communication  (clarity, reasoning, self-confidence) | | | | | | |
| Interpersonal skills and engagement, including in a multicultural context | | | | | | |
| **Independence** | | | | | | |
| Ability to present and defend her/his own ideas | | | | | | |
| Capacity to access sources of information and to evaluate them | | | | | | |
| Capacity to self-evaluate and to respond constructively to feedback | | | | | | |
| **Overall Evaluation** | | | | | | |

# Mandatory Steps for a 2-6 month internship

- Find an internship position and in case you have found it by yourself, without using the IS-A portal, have the subject validated by your section deputy.

- Cancel all ongoing applications by gently notifying the companies. This step is extremely important to keep a good relationship with future employers.

- Transmit internship agreement to the employer and have it filled out and signed by the employer, you and SIQ.

- If you are a non-swiss/EU citizen, ask the company to request a work authorization for the duration of the internship.

- Once all the details of your internship have been settled, enter or edit the details of your internship on the IS-A internship portal. Upload a copy of the signed internship agreement.

- If your internship takes place during an academic semester, make sure to update your FRAC

- At the end of the internship, fill out the evaluation report that will be sent to you by e-mail. The evaluation procedure starts 2 weeks prior to the official ending of the internship. Both the student and the supervisor will fill out an evaluation report.

# Best practice to set up a master thesis in industry
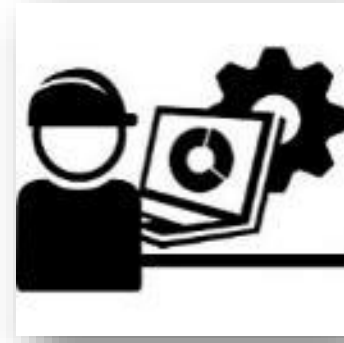
✔️ Companies get in touch with research labs to propose master thesis topics

❌ Companies can hire students for internship proposals and accept the format change to master thesis projects without involving a Professor

Compatibility with academic calendar

IP owner(s)

Confidentiality

Eligibility of candidate for master thesis

✔️ Professors and teachers propose master thesis projects with known partner companies
Professors and teachers evaluate the academic content of proposals from companies before accepting it as master thesis projects

❌ Professors and teachers evaluate the academic content of student proposals without interacting with the host company

✔️ Students contact professors of their section to ask for existing industrial projects

❌ Students apply for internships on the IS-A portal and have it validated as master thesis projects by the company without involving the supervising professor

# Ideal Scenario for Master Projects in industry



Company has an idea for a master thesis project

Company discusses the project with a Professor

Company submits the proposal on the EPFL portal

Project starts under co-supervision by company and professor

Student applies for the project through the portal and gets accepted by the company

# Master thesis in industry – offers on the internship portal

| Action | Stage | Entreprise mère | Localisation du stage | Févr–Sept (P1) | Juil–Févr (P2) | Juil–Sept (P3) | N° du stage | Format | Inscrits | Places | Prof | Date de création du stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | = | [tous] | | | | | | |
| 👁 ✏ | Amélioration qualité image satellite par contrôle fin de la ligne de visée | Thales Alenia Space | Cannes, France | ✓ | | | 18976 | Stage | 0 | 1 | | 14.09.2017 |
| 👁 ✏ | Experimental Physics Internship | Distran GmbH | Zurich | ✓ | | | 18973 | PDM ou Stage | 0 | 1 | à trouver (si PDM) | 14.09.2017 |
| 👁 ✏ | Transfer learning for field and crop adaptation in agriculture applications | ecoRobotix | Yverdon-les-Bains | ✓ | | | 18972 | PDM ou Stage | 0 | 1 | à trouver (si PDM) | 14.09.2017 |
| 👁 ✏ | Product Engineer | Infineon Technologies France | Aix en Provence | ✓ | | | 18967 | Stage | 0 | 1 | | 14.09.2017 |
| 👁 ✏ | déploiment d'un système de sureté pour un site sensible | Etavis tsa | Carouge | ✓ | | | 18962 | Stage | 0 | 1 | | 13.09.2017 |
| 👁 ✏ | Thermal effect and Compensation in high precision states | Etel S.A. | Bienne | ✓ | | ✓ | 18953 | Stage | 0 | 1 | | 13.09.2017 |
| 👁 ✏ | Intern Manufacturing | Stryker Trauma AG | Selzach (SO) | ✓ | | | 18934 | Stage | 0 | 1 | | 12.09.2017 |
| 👁 ✏ | Modélisation d'un processus de laminage | Constellium Valais SA | Sierre | ✓ | | | 18933 | Stage | 0 | 1 | | 12.09.2017 |
| 👁 ✏ | Hybrid PET/MR imaging guided radiation therapy treatment planning | Hôpitaux Universitaires de Genève | HUG Genève | ✓ | ✓ | | 18930 | PDM coordonné | 0 | 2 | Prof. Thiran Jean-Philippe | 12.09.2017 |
| 👁 ✏ | Various internship positions in Motion analysis Startup for applications in Sports, Health and Gaming | Gait Up | Renens | ✓ | | | 18922 | Stage | 1 | 2 | | 12.09.2017 |
| 👁 ✏ | Various internship positions in Motion analysis Startup for applications in Sports, Health and Gaming | Gait Up | Renens | ✓ | ✓ | | 18920 | PDM coordonné | 0 | 2 | Prof. Aminian Kamiar | 12.09.2017 |
| 👁 ✏ | Printed freeform optics for light control | CSEM SA Muttenz | Basel | ✓ | | | 18915 | PDM ou Stage | 0 | 1 | à trouver (si PDM) | 11.09.2017 |

H. Klinke

# Your start-up as substitute to a master thesis in industry?

- A few students will be able to undertake their master projects in industry, at the EPFL Innovation Park to work for their own startup.

- Projects will be co-supervised by a mentor from the Vice Presidency for Innovation and a professor from the section

- This opportunity will be offered to 3-4 projects per year. Students will have to go through a selection process, start by contacting pdm-eip@epfl.ch

- More information about the program could be found here:
    - https://www.epfl.ch/innovation/startup/students/master-project-in-your-startup/

Internships info session

# Master project agreement

- The master thesis agreement (access for teachers only) specifies the commitments and responsibilities of the supervising teacher, the company and the student.

- This agreement can be signed upon request of the teacher or the company

- It defines IP and confidentiality aspects for any master thesis in industry without existing collaborations.

- It allows the academic supervisor to have access to the results of your work without having to sign an NDA.

- As it is not mandatory, amendments and changes requested by companies won't be accepted by the internship coordination or the legal department of EPFL

⚠️ **Making a master project in the industry does not exempt you from the mandatory internship**

Agreement for master project

## Agreement for master project

**Important notice for the heads of EPFL laboratories:**
**This agreement shall not be signed:**

1) **when the master project is part of a research project financed by the company.** In such a case, a research agreement shall be negotiated and executed in collaboration with the company and the Technology Transfer Office of EPFL (TTO) and the student will sign with EPFL an agreement on intellectual property and confidentiality.

2) **when the laboratory discloses to the Student source code or EPFL confidential information.** In such a case, the ownership on and the right to use EPFL intangible assets and the results of the Student shall be well analysed and discussed. Do not hesitate to contact TTO.
**In addition, this agreement may only be signed if it is fully compatible with the other projects within the laboratory.**

The present agreement is entered into by the three following Parties:

The host company

# Mandatory Steps for a Master project in Industry

- Find a master project in industry by contacting the professors of your section.

- A master subject can also be found through the IS-A Internship portal. In this case, it is mandatory to find a professor willing to supervise you before you accept the offer from the company.

- All administrative details of your master project in industry have to be settled between the employer and the professor supervising your work. A special Master project agreement can be signed on request by the supervising professor or the partner company.

- Once all the details of your Master project have been settled, register your project in your study plan.

- Update your FRAC

- General information about Master's Projects

# Information and contacts

- For additional information, please visit the internship pages of SIQ:
  - https://www.epfl.ch/schools/sections/quantum-science-and-engineering/industry-internship/
- EPFL webpage:
  - https://www.epfl.ch/education/studies/en/rules-and-procedures/internships/
- Depending on your inquiry, you can contact the following persons:

Hind Klinke

Section deputy SIQ
Internship Coordinator

Emilie Thévoz

Administration SIQ

# Questions ?



Thank you for your attention

And best of success for your internship campaign!

☺