Play Intro Movies

Microengineering: https://www.youtube.com/watch?v=oRYATjLKwVo&t=3s

Robotics: https://www.youtube.com/watch?v=SrLuHUc0900

Welcome Master students !

Prof. Francesco Mondada
Robotics master
program director

Prof. Christophe Moser
Section director

Dr. Sebastian Gautsch
Section adjunct

Isabelle Schafer
Administration

General info:

https://www.epfl.ch/education/

http://smt.epfl.ch/

Agenda

14h00 – 14h10	Welcome and intro to Microengineering section
14h10 – 15h00	Your Master studies Microengineering Master Robotics Master
15h00 – 15h10	AgePoly presentation about student delegates
15h10 – 15h20	Coaching presentation about activities
15h20 – 15h30	Welcome by the Section Director and Adjunct, Q & A
15h30 – 16h30	Icebreaker session with coaches
17h00 - …	*Welcome party*

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mt
microtechnique
microengineering
section

Welcome & Intro to the Microengineering section

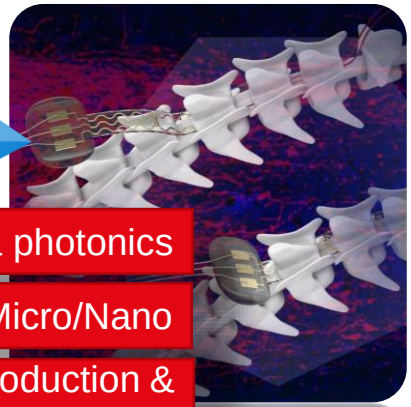
Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Microengineering Bachelor

Robotics master

- Industrial
- Mobile
- Medical

Microengineering master



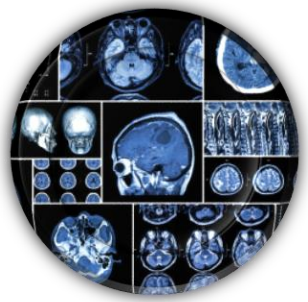
- Optics & photonics
- Micro/Nano
- Advanced production & manufacturing

Minors

Optics & Photonics

Biomedical Technologies

Imaging



What is Microengineering ?

Microengineering is a branch of engineering that deals with the design and fabrication of very small structures and devices, typically on the scale of micrometers or smaller. It involves the use of microfabrication techniques to create complex systems and machines with dimensions that are often measured in microns.

Microengineering encompasses a wide range of applications, including micro-electronics, micro-electromechanical systems (MEMS), microfluidics, nanotechnology, and bioengineering. Some examples of microengineering products include microsensors, micro-actuators, micro-optics, microfluidic chips, and microelectronic devices.

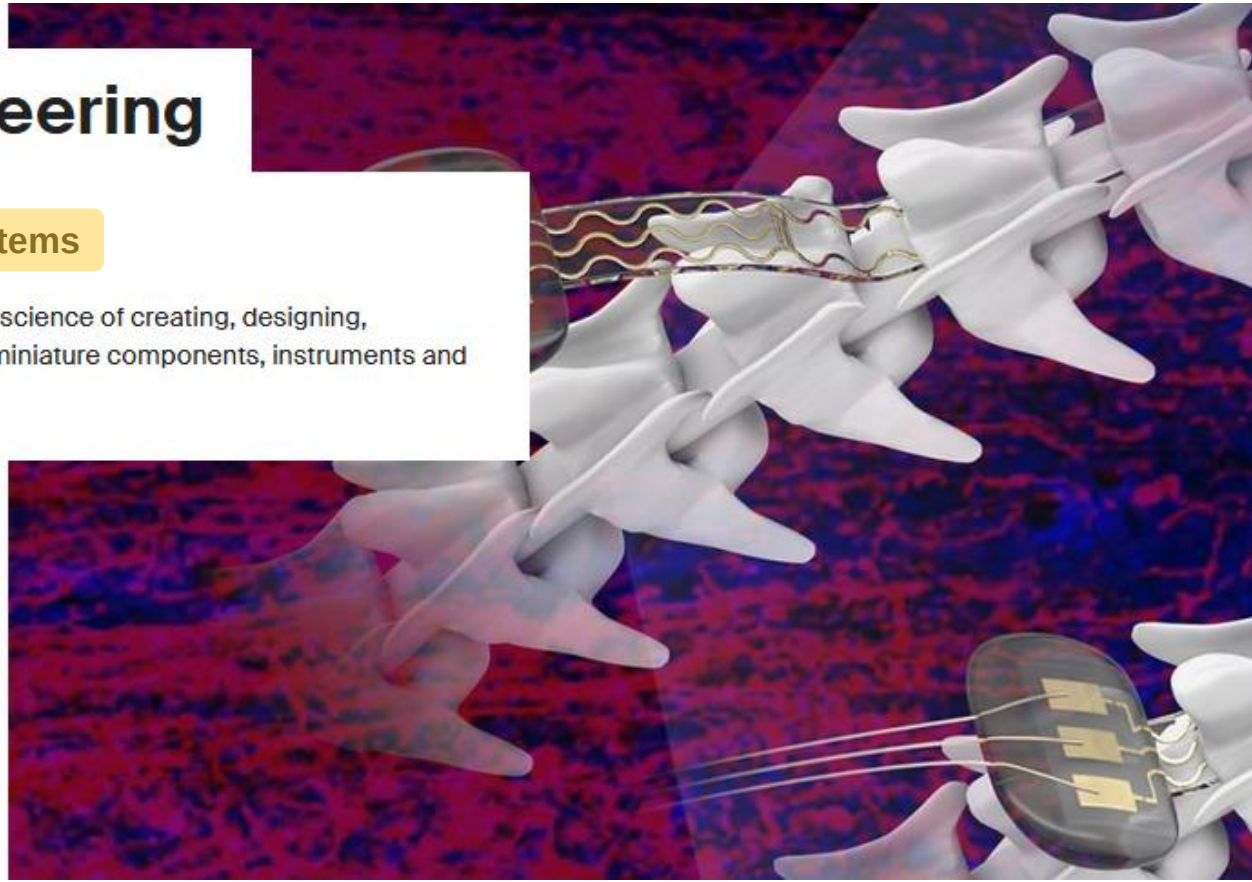
Microengineering plays an increasingly important role in many fields, including medicine, electronics, materials science, and environmental monitoring. By creating devices that are small, efficient, and precise, microengineering is enabling new applications and advancing scientific understanding in a variety of areas.

What is Microengineering ?

Microengineering

Engineering Small systems

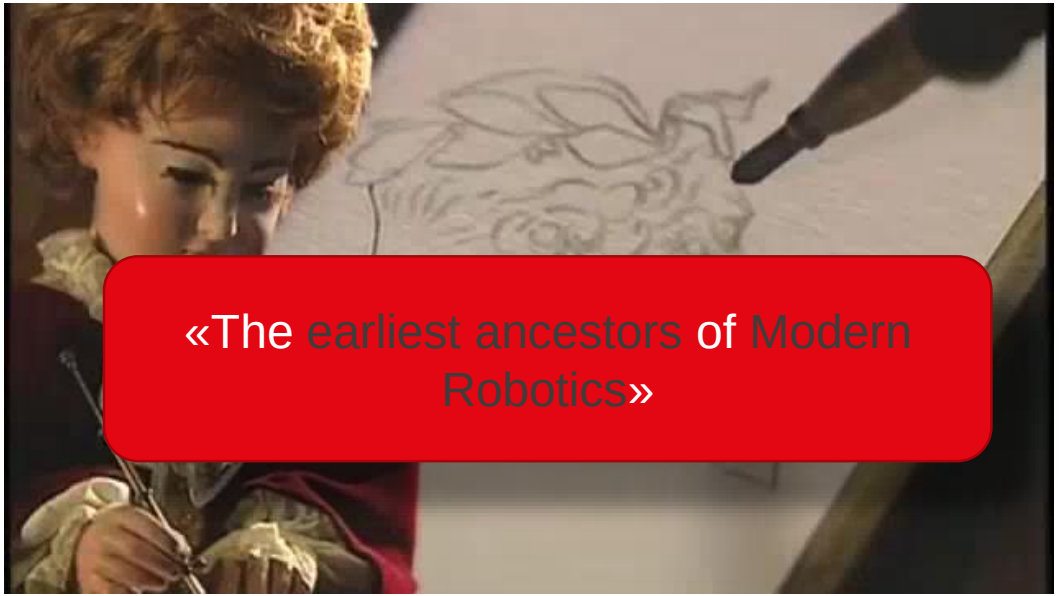
Microengineering is the art and science of creating, designing, integrating and manufacturing miniature components, instruments and products.



Watch Valley: Birthplace of Swiss Watchmaking

History of Microengineering

The Jaquet-Droz Automata
(*La Chaux-de-Fonds* - 1768 and 1774)



«The earliest ancestors of Modern Robotics»

Le dessinateur
(2000 pieces)

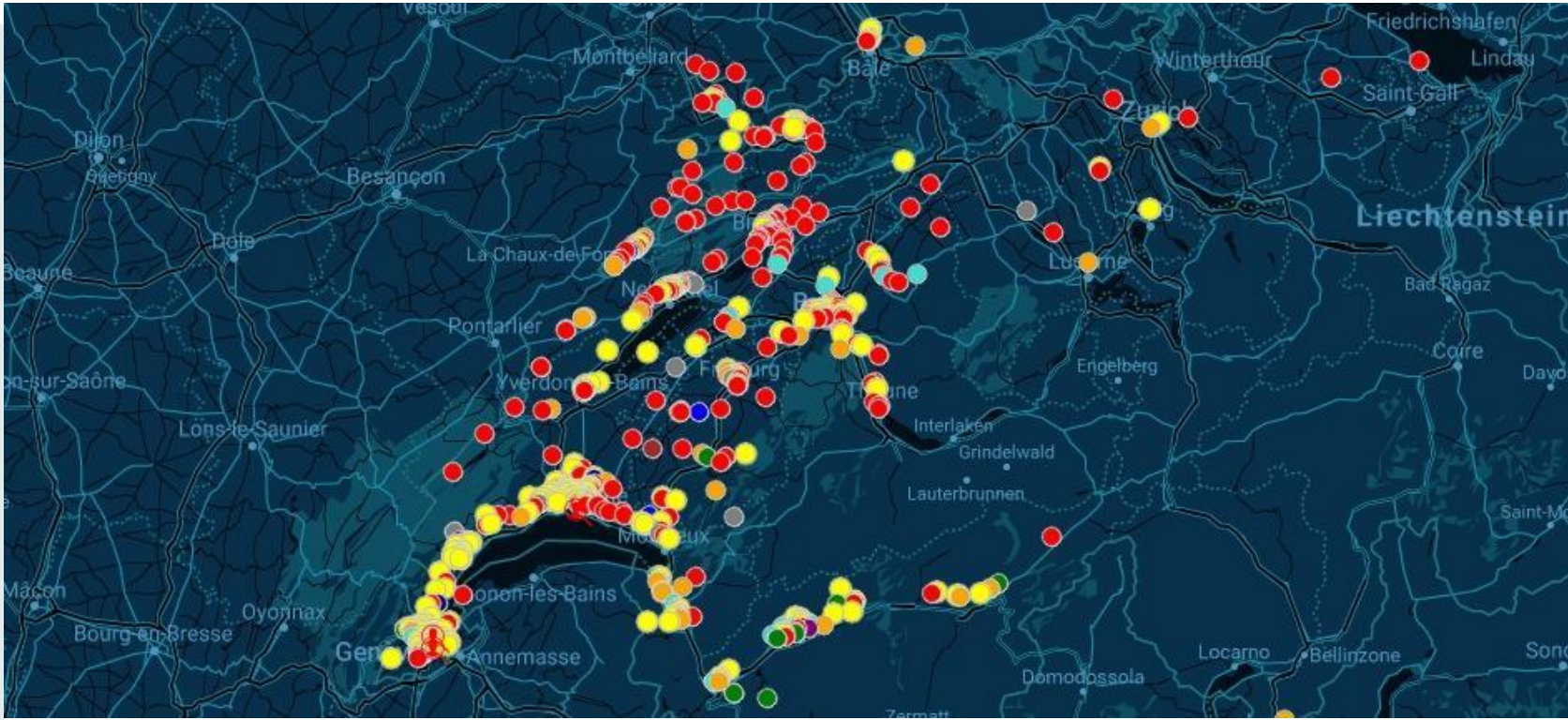
History of Microengineering

2009 – Spiral made of Silicon
Institut de Microtechnique, Patek-Philippe, *Neuchâtel*

PATEK PHILIPPE
GENEVE

Building on History - The Health Valley

"Western Switzerland's Health Valley is home to 39 research and academic institutions, 1'020 companies, 62 private and public innovation support programs and over 5'000 life sciences students"



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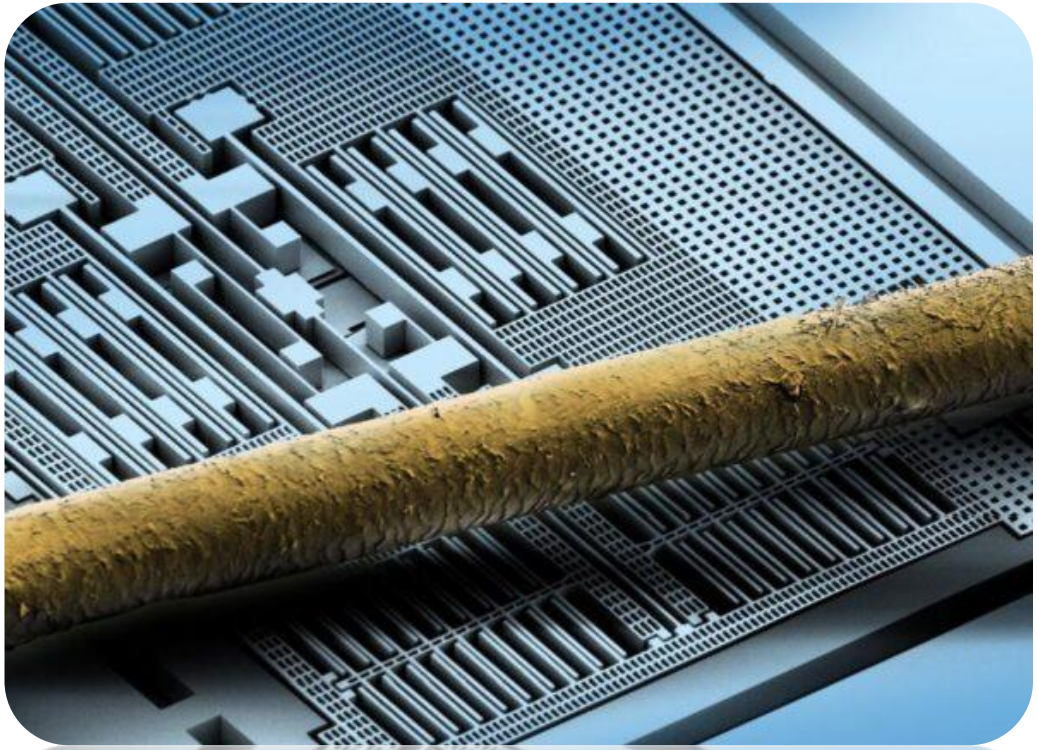
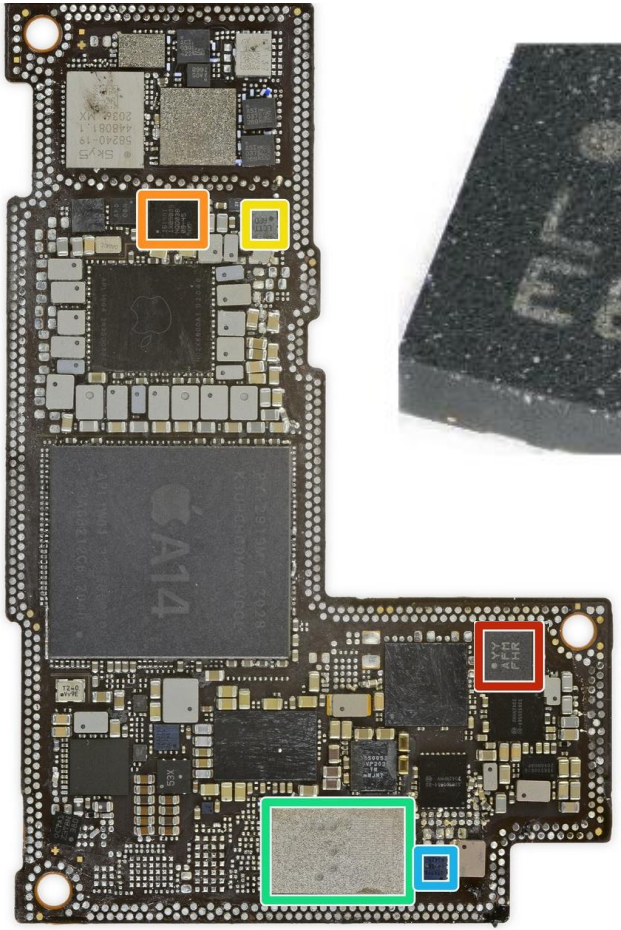
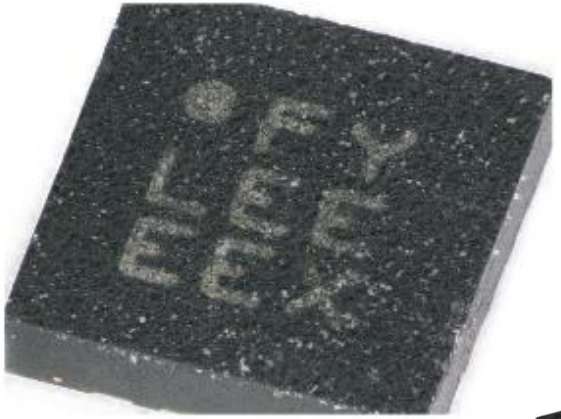
microengineering
section

Microsystems

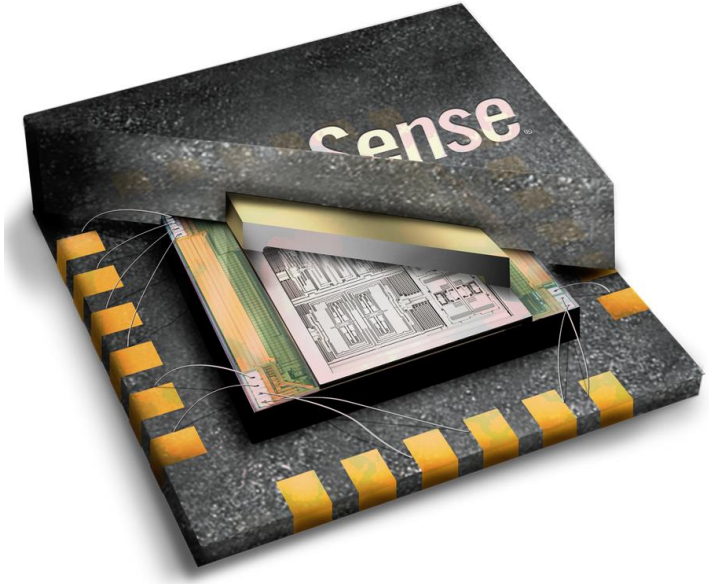


Microsystems and Motion Sensors



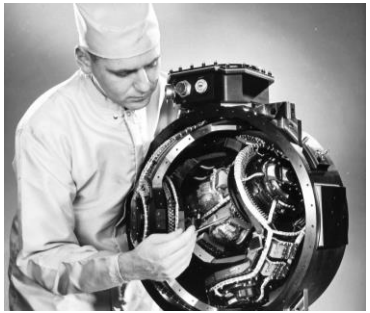


- Accelerometers: X, Y, Z
- Gyroscope: Role, Pitch, Yaw
- Magnetometer: X, Y, Z
- GPS

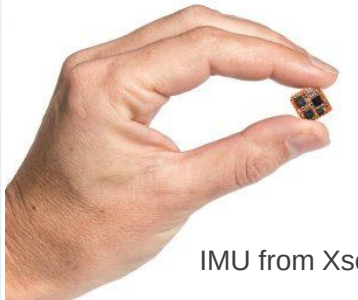


Why go Small ???

Size and Mass



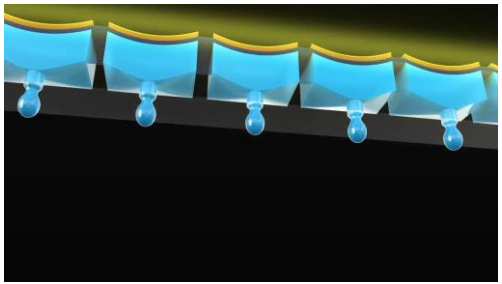
IMU on Saturn V (1960)



IMU from Xsens (2019)

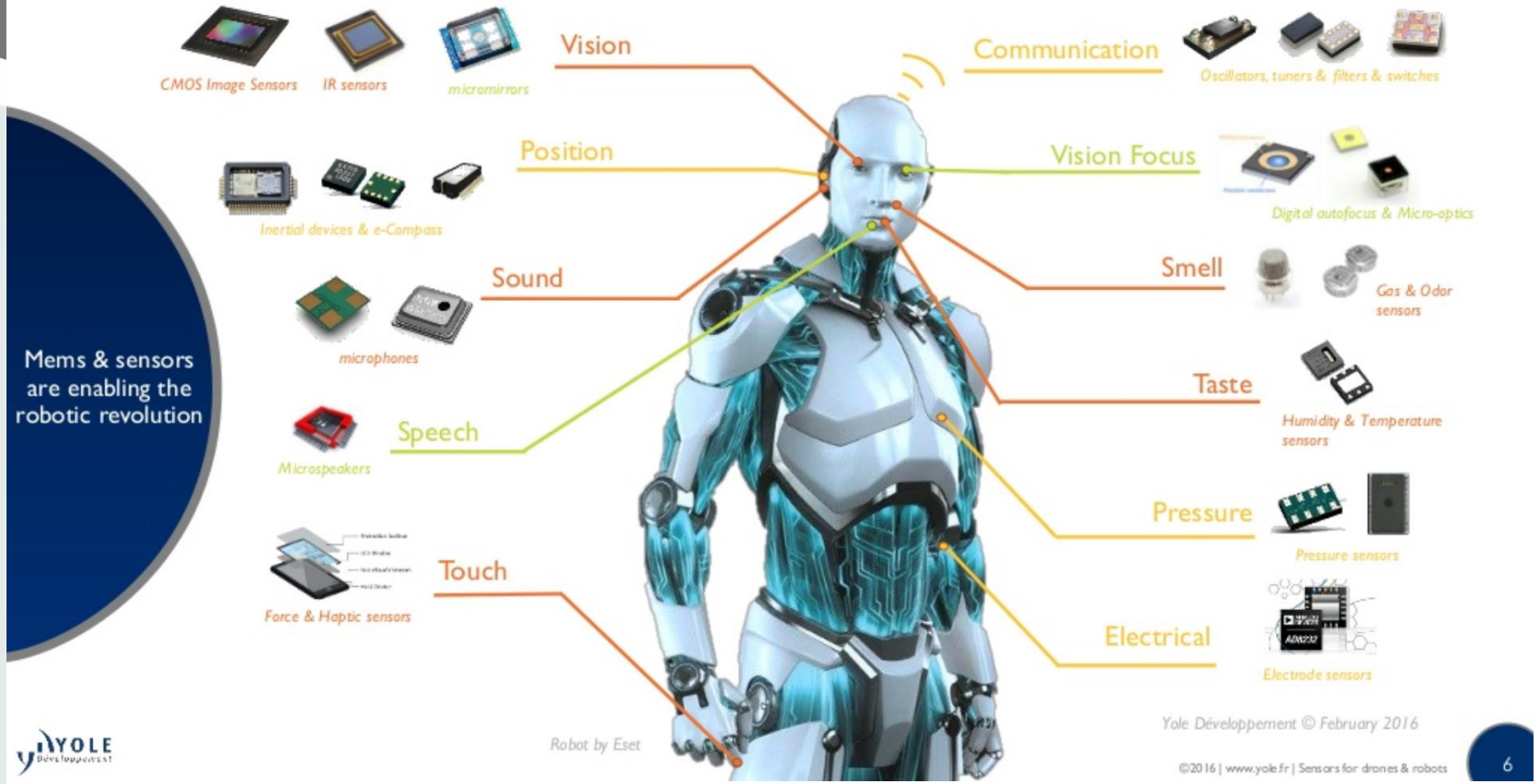
Speed

40’000 droplets per second



Energy consumption

Robotics and Sensing



Mems & sensors are enabling the robotic revolution

Machine Learning, Artificial Intelligence

Mind controlled Robots

Sustainable Engineering

Worldwide recognition of our programs

EduRank

28. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Engineering
#4 in Europe
#1 in Switzerland
Enrollment 12,576

8. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Robotics
#1 in Europe
#1 in Switzerland

14. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Nanotechnology
#2 in Europe
#1 in Switzerland
Enrollment 12,576

8. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Electrical Engineering
#1 in Europe
#1 in Switzerland

20. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Materials Science
#3 in Europe
#1 in Switzerland

23. Federal Institute of Technology Lausanne
Switzerland | Lausanne
For Optical Engineering
#4 in Europe
#1 in Switzerland

https://edurank.org/engineering/nanotechnology/

Tuition fees MIT / year

Massachusetts Institute of Technology

EXPENSE	COST	DESCRIPTION
Tuition	$59,750	MIT subsidizes the total cost of tuition for every student. (It actually costs more than double this amount to provide our cutting-edge research facilities and faculty!) Tuition covers basic health insurance [02] and will give you urgent care, mental health visits, and specialist care at no extra cost.
Student life fee	$406	This helps to support student clubs, organizations, and the sports and fitness center. It also covers unlimited access to the gym, fitness classes, student organization events, and trips.
Housing	$12,380	All first-year students are required to live on campus. While our residence halls and living groups vary in cost, we calculate financial aid based upon the most expensive double room ($12,380). We'll bill you in July for $6,190 (one semester of the most expensive room), then adjust it based on your actual housing cost in September. Your financial aid allowance will stay the same regardless of your actual expenses.
Food	$7,010	There are multiple dining plan options, including cooking for yourself, but for the purposes of determining your financial aid eligibility, we budget $7,010 per year for meals. This covers the most expensive meal plan. The amount won't change regardless of your actual expenses.
Books, course materials, supplies & equipment	$880	MIT estimates $880 for these out-of-pocket expenses, regardless of how much you spend.
Personal expenses	$2,304	MIT estimates this amount to cover expenses such as clothes, laundry, and other bills. We use this amount regardless of how much you spend.
Total	$82,730	Remember, this is the price, before any aid.

https://sfs.mit.edu/undergraduate-students/the-cost-of-attendance/annual-student-budget/

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microtechnique
microengineering
section

Your Master studies

Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Your EPFL e-mail !!!

1stname.lastname@epfl.ch

- Should now become your reference account
- Important info regarding your studies will be sent to this address

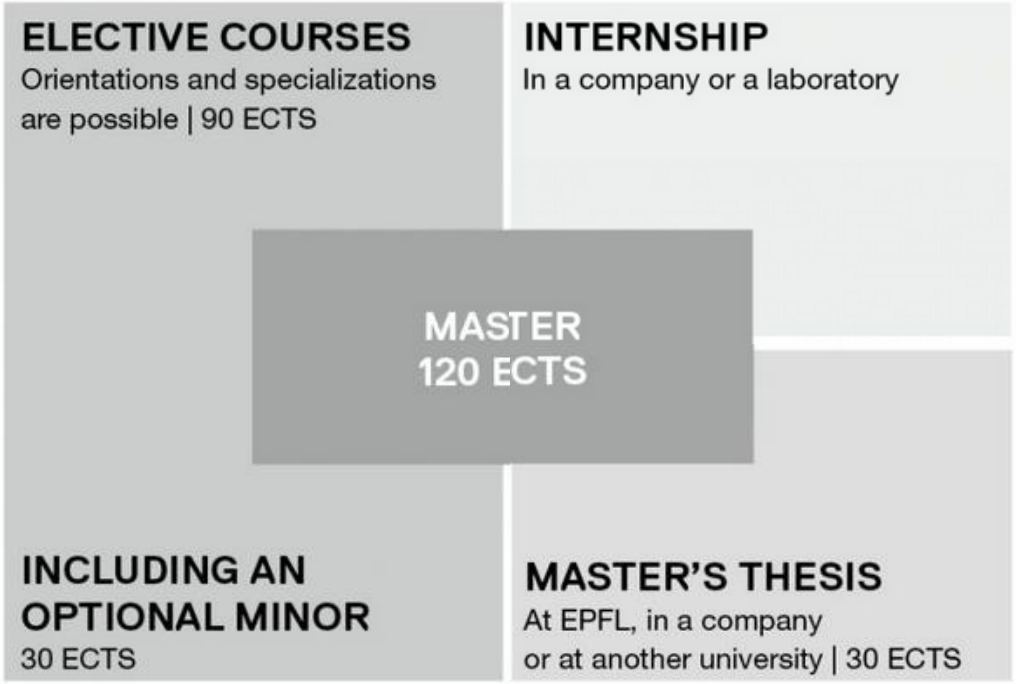
«Ignorantia juris non excusat»

- In case of doubt, please consult official regulations for your studies

Section website: smt.epfl.ch

- Find important and useful info & links for your studies

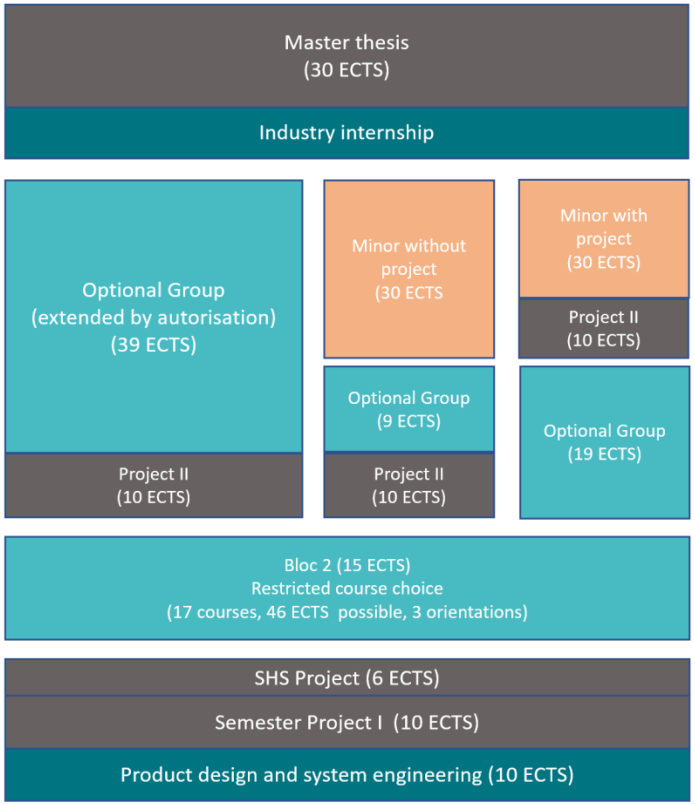
Master program structure



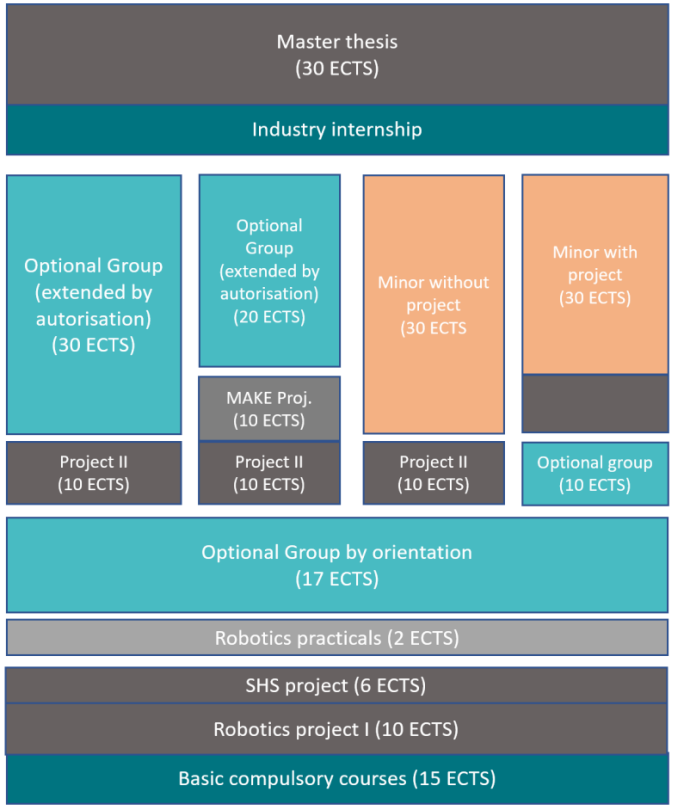
https://www.epfl.ch/education/master/study-programs-structure/

Master Program structures

Microenginering



Robotics



Your study plans online

Master project (.)

COURSES	LANGUAGE	MASTER 1 L	MASTER 1 E	MASTER 1 P	MASTER 2 L	MASTER 2 E	MASTER 2 P	MP AUTUMN L	MP AUTUMN E	MP AUTUMN P	MP SPRING L	MP SPRING E	MP SPRING P	EXAM	CREDITS
Engineering internship credited with master project (master in Microengineering) *(Stage d'au minimum 8 semaines après le 2ème semestre de Master. Inscription par la bourse aux stages)* MICRO-597 / Section MT Profs divers	FR	-	-	320h	-	-	320h	-	-	320h	-	-	320h	**Winter/Summer session** Term paper	0
Master project in robotics MICRO-598 / Section MT Profs divers	FR/EN	-	-	-	-	-	-	-	-	900h	-	-	900h	**Winter/Summer session** Oral	30

Block 1

COURSES	LANGUAGE	MASTER 1 L	MASTER 1 E	MASTER 1 P	MASTER 2 L	MASTER 2 E	MASTER 2 P	SPECIALISATIONS/ORIENTATIONS	EXAM	CREDITS
Applied machine learning MICRO-455 / Section MT Billard	EN	4h	-	-	-	-	-		**Winter session** Written	4
Basics of mobile robotics MICRO-452 / Section MT Mondada	EN	2h	2h	-	-	-	-		**Winter session** Written	4
Basics of robotics for manipulation MICRO-450 / Section MT Bouri	EN	3h	-	-	-	-	-		**Winter session** Written	3
Model predictive control ME-425 / Section GM Jones	EN	2h	2h	-	-	-	-		**Winter session** Written	4

https://edu.epfl.ch/studyplan/en/master/microengineering/
https://edu.epfl.ch/studyplan/en/master/robotics/

Course and exam registrations

You must **register yourself** for all subjects taught in the Bachelor's and Master's programs, **including compulsory topics**. Registration is done through your secure access to the IS-Academia application:

- for subjects taught in the **autumn semester**: from August to the **Friday of the second week** of the autumn semester
- for subjects taught in the **spring semester**: from January to the **Friday of the second week** of the spring semester

https://www.epfl.ch/education/studies/en/rules-and-procedures/faq/registering-courses-exams-register/

Requirements for obtaining the master's degree

- Block

A **block is passed** (and thus all the credits associated with the block are acquired) when all the subjects it contains have been examined at least once and the **weighted average of the block is 4,00 or above**.

- Group

A **group is passed** when **enough subjects in the group are passed** (final grade 4,00 or above) **to reach the number of credits** associated with the group. Although an average is calculated, it has no bearing on the passing of the group.

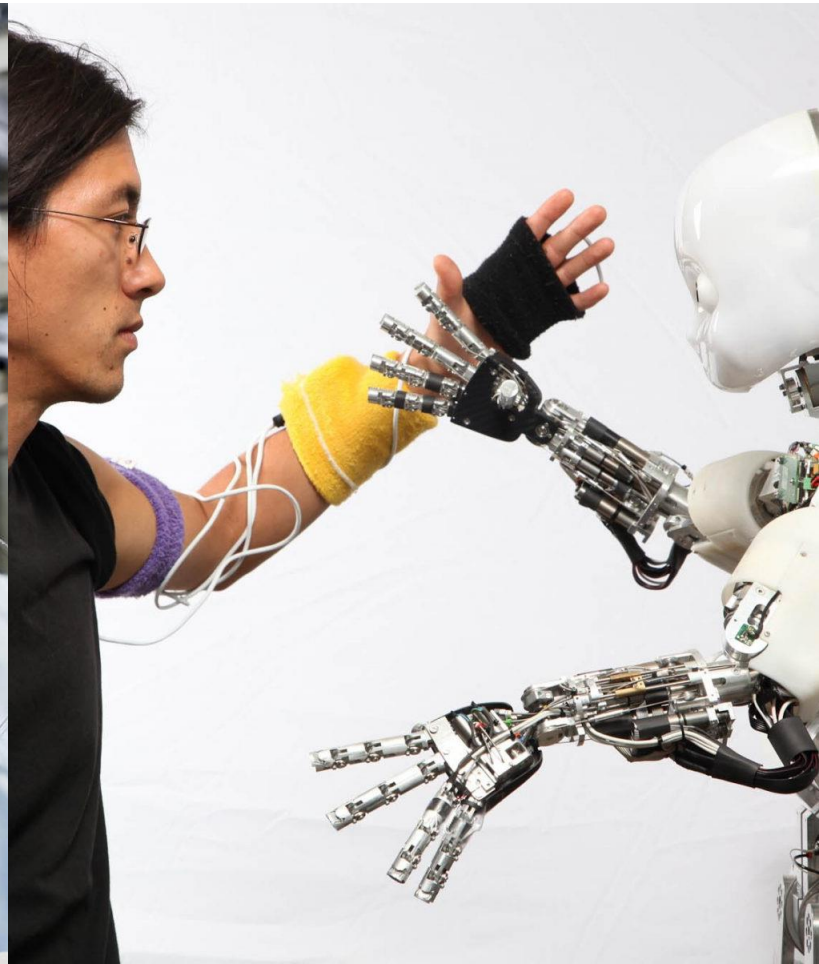
Requirements for passing the internship and the Master's project

Please check the webpages dedicated to the internships and to the Master's projects.

https://www.epfl.ch/education/studies/en/rules-and-procedures/pass-conditions/requirements-passing-master-degree/

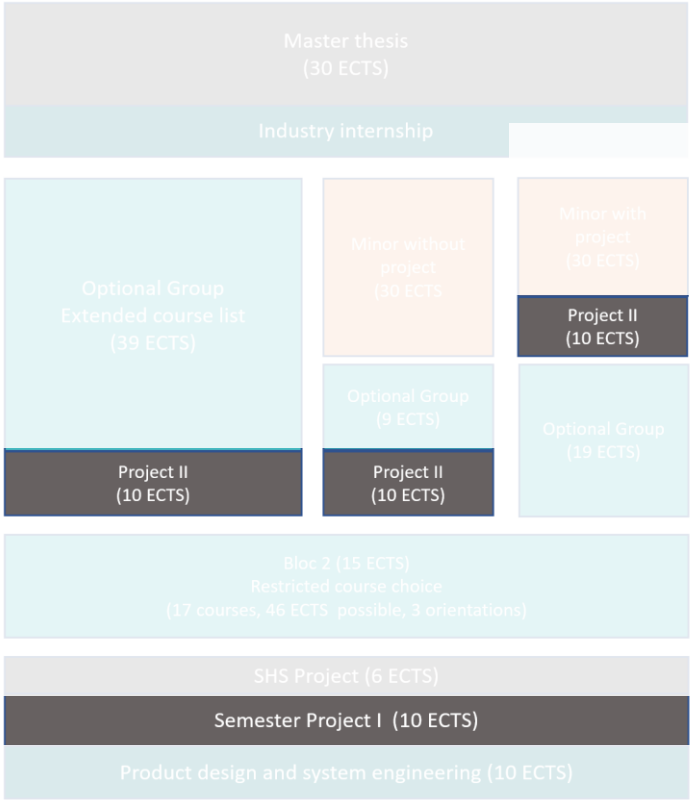
EPFL mt microtechnique microengineering section

2 mandatory semester projects

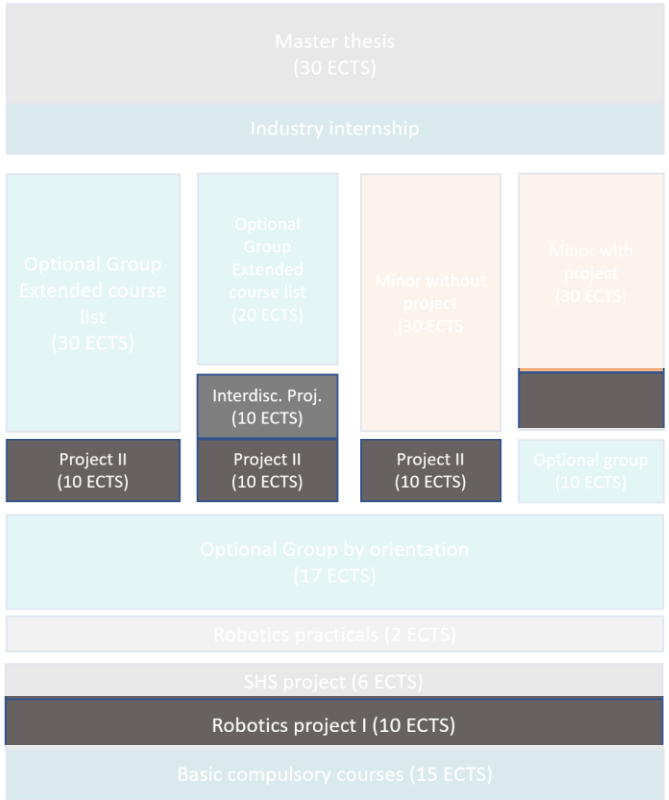


Semester projects ...

Microenginering



Robotics



Semester projects guidelines

MICROENGINEERING

Home | About | BSc in Microengineering | MSc in Microengineering | MSc in Robotics | PhD Studies | Contact

Semester projects guidelines

Find a project

We recommend to look for your project at the end of the previous semester. Browse through the following pages

- Lab webpages dedicated to projects
- Extraction list from the IS-A project portal

These project lists are non-exhaustive and other projects can be found by contacting directly the labs of interest.

Reserve your project as early as possible. Meet with the Professor in charge and define the objectives and work to be accomplished.

IMPORTANT : If the Professor proposing the project is not affiliated with Microengineering section, the project has to submitted for validation to sebastian.gautsch@epfl.ch.

It is not allowed to take two projects during the same semester, neither to carry out two projects in the same laboratory.

Registration

Register on IS-A as soon as the portal is opened by the Academic Service. (this registration is official and mandatory, please respect the deadlines).

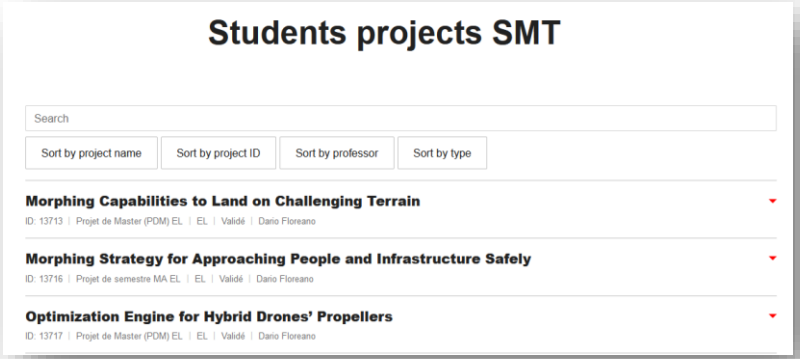
Attention, the semester project is non-withdrawable. Once enrolled, it is no longer possible to change.

https://sti.epfl.ch/smt/smt-semester-project-guidelines/

Finding a project

Lab websites with semester and master projects proposals

		LABORATOIRES
Institut	**LAB**	**Laboratoire**
STI-IEM	AQUA	**Advanced Quantum Architecture Laboratory**
STI-IBI	Biorob	**Biorobotics Laboratory**
STI-IEM	BNMS	**Biomedical and neuromorphic microelectronic systems**
STI-IGM	CREATE-Lab	**Computational Robot Design & Fabrication Lab**
STI-IGM	DDMaC	**Data-Driven Modelling and Control Group**
ENAC-IIE	DISAL	**Distributed Intelligent Systems and Algorithms Laboratory**



IMPORTANT :

- If the Professor proposing the project is not affiliated with Microengineering section, the project has to submitted for validation to sebastian.gautsch@epfl.ch
- It is not allowed to take two projects during the same semester, neither to carry out two projects in the same laboratory

https://sti.epfl.ch/smt/smt-lab-websites-with-semester-and-master-projects-proposals/
https://inside.epfl.ch/projets-etudiants-sti/microengineering/students-projects-smt/

Important dates

Project starting date:

- Beginning of the semester

Report hand in

- Spring semester : at the latest on Friday of the **first** week after the end of the semester
- Fall semester : at the latest on Friday of the **second** week after the end of the semester

Your mark will be transferred to SAC 15 days after the report has been handed in.

IMPORTANT: The supervising Professor should confirm the exact dates to hand in the report and the oral presentation at the beginning of the project.

Guidelines

An oral presentations of the work progress at mid-semester is strongly recommended.
A final presentation at the end of the project is mandatory. The dates have to be defined with the Professor
Recommandations for intermediate and final presentations
Template for intermediate presentation
Template for final presentation

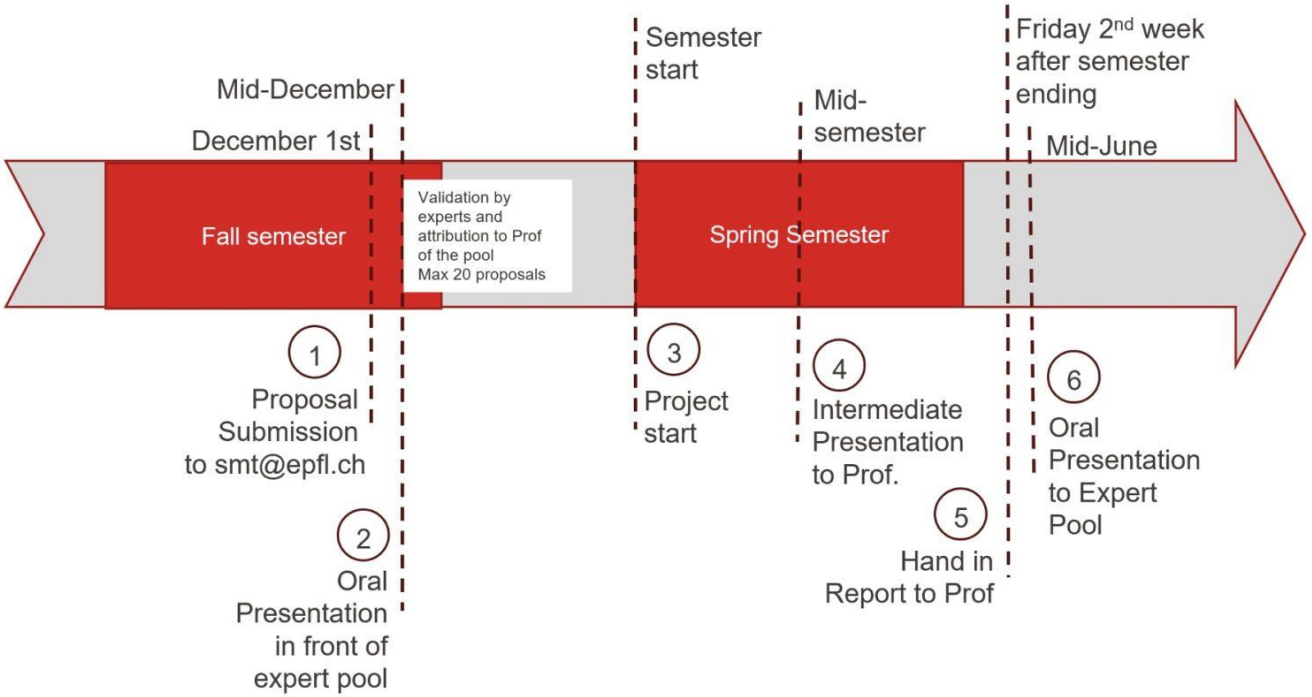
A written report is mandatory at the end of the project
Extensive Semester/Master thesis report template
Example of a typical semester project report

The written report will be followed by an oral defense, organized by the Professor.
Procedure for entering grades in IS-Academia

The section also recommends to complete the following form (which is a supplement to the evaluation) and to send the PDF to the Section for the student's file.
Project evaluation sheet (template)

https://sti.epfl.ch/smt/smt-semester-project-guidelines/

Guidelines for validating an "out of the lab" semester project related to a MAKE projects



https://www.epfl.ch/education/educational-initiatives/discovery-learning-program-2/interdisciplinary-projects/
https://sti.epfl.ch/smt/smt-guidelines-for-validating-an-out-of-the-lab-semester-project-related-to-a-make-projec

EPFL
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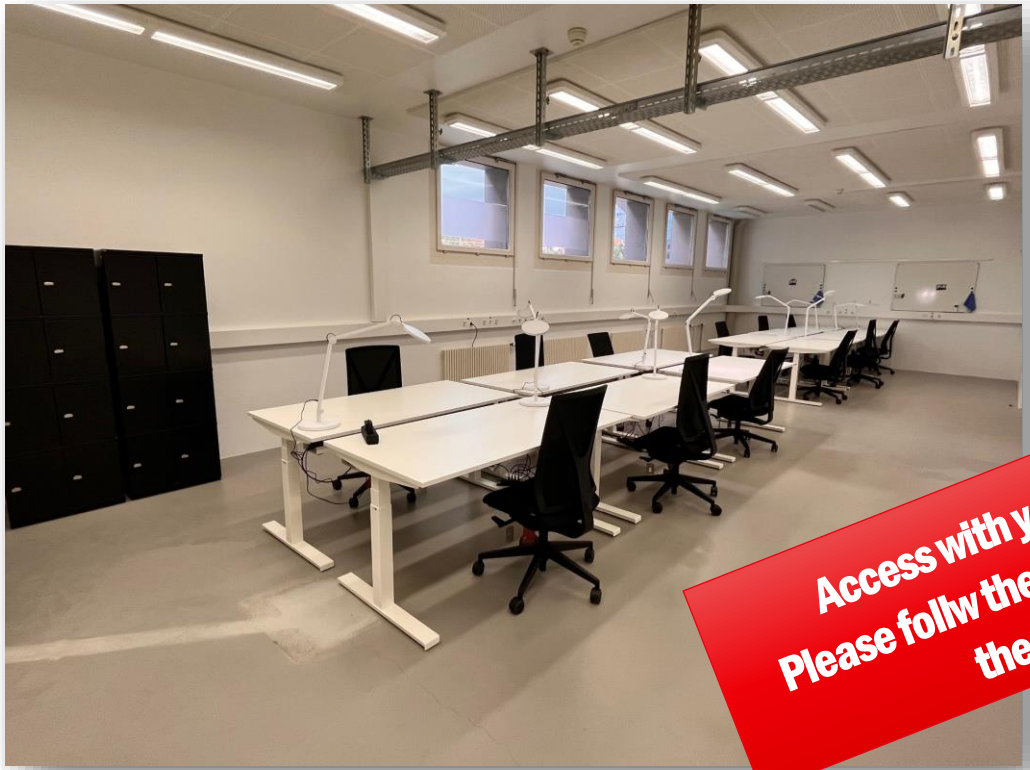
microtechnique
microengineering
section

Study room in BM 0246
Exclusively for SMT Master students !

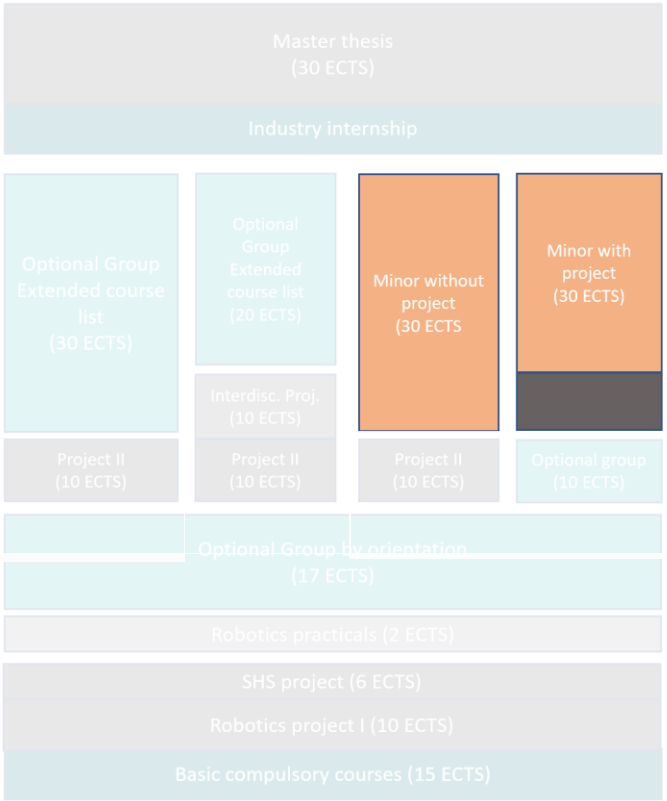


Access with your Camipro card
Please follw the rules and guidlines of the study room !

Minors

Microenginering

Robotics



Minors (optional)

The student **informs the section of his choice of minor** and **selects it in the course-registration screen on IS-Academia**, **no later than the beginning of the 2nd semester** of his Master's studies.

A minor is successfully completed when **30 credits at minimum have been gained** among the approved subjects. Each subject must be successfully completed on it own merits: there is no possible compensation between the subjects. These 30 credits **add to the total for a 90-credit Master's program.**

Rules and procedures:
https://www.epfl.ch/education/studies/en/rules-and-procedures/minors/

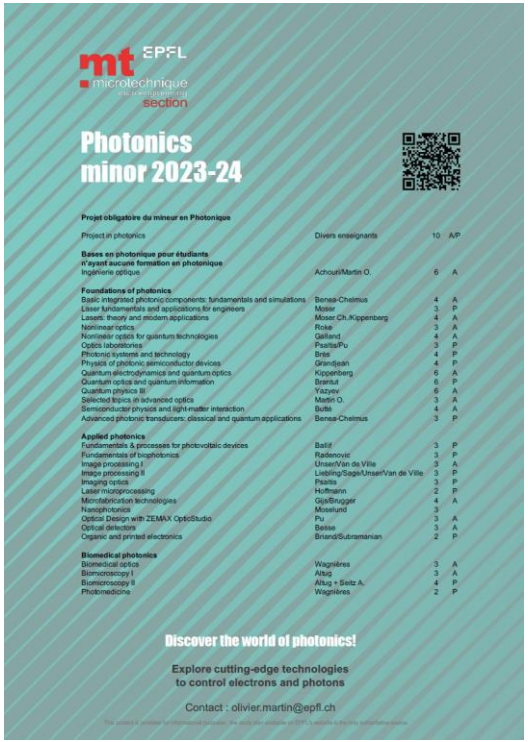
Recommended and possible Minors

			MT	
			MT	MT-Ro
		Master ECTS (PdM ir	120	120
Mineurs / Minors	**Type**	**Section**		
Imaging	Interdiscipl.	MT	r	r
Technologies biomédicales / Biomedical technologies	Interdiscipl.	MT	r	r
Photonique / Photonics	Interdiscipl.	MT	r	r
Energie / Energy	Interdiscipl.	GM	r	r
Ingénierie pour la durabilité / Engineering for sustainability	Interdiscipl.	SIE	r	r
Neuro-X	Discipl.	NX	r	r
Physique des systèmes vivants / Physics of living systems	Interdiscipl.	SV	r	r
Science et ingénierie quantiques / Quantum science and engineering	Discipl.	SIQ	r	r
Technologies spatiales / Spacial technologies	Interdiscipl.	EL	r	r
Data and internet of things	Interdiscipl.	EL	r	c
Management, technologie et entrepreneuriat / Technology management and entreprene	Interdiscipl.	MTE	r	c
Science et ingénierie computationnelles / Computational science and engineering	Discipl.	MA	r	c
Architecture	Discipl.	AR	c	c
Computational Biology	Interdiscipl.	IN	c	c
Biotechnologie / Biotechnology	Interdiscipl.	CGC	c	c
Chimie et génie chimique / Chemistry and chemical engineering	Discipl.	CGC	c	c
Cyber security	Discipl.	IN	c	c
Data science	Discipl.	SC	c	c
Design intégré, architecture et durabilité / Integrated Design, Architecture and Sustaina	Interdiscipl.	AR	c	c
Génie civil / Civil engineering	Discipl.	GC	c	c
Génie électrique et électronique / Electrical and electronic engineering	Discipl.	EL	c	c
Génie mécanique / Mechanical engineering	Discipl.	GM	c	c
Ingénierie des systèmes / Systems Engineering	Interdiscipl.	MTE	c	c
Informatique / Computer science	Discipl.	IN	c	c
Ingénierie des sciences du vivant / Life sciences engineering	Discipl.	SV	c	c
Ingénierie financière / Financial engineering	Discipl.	IF	c	c
Mathématiques / Mathematics	Discipl.	MA	c	c
Physique / Physics	Discipl.	PH	c	c
Science et génie des matériaux / Materials science and engineering	Discipl.	MX	c	c
Sciences et ingénierie de l'environnement / Environmental sciences and engineering	Discipl.	SIE	c	c
Statistique / Statistics	Discipl.	MA	c	c
Systèmes de communication / Communication systems	Discipl.	SC	c	c

r recommanded in the study plans

c choice of the courses with the advice of the initiating section and the person in charge of the minor

SMT Minors



Photonics minor 2023-24

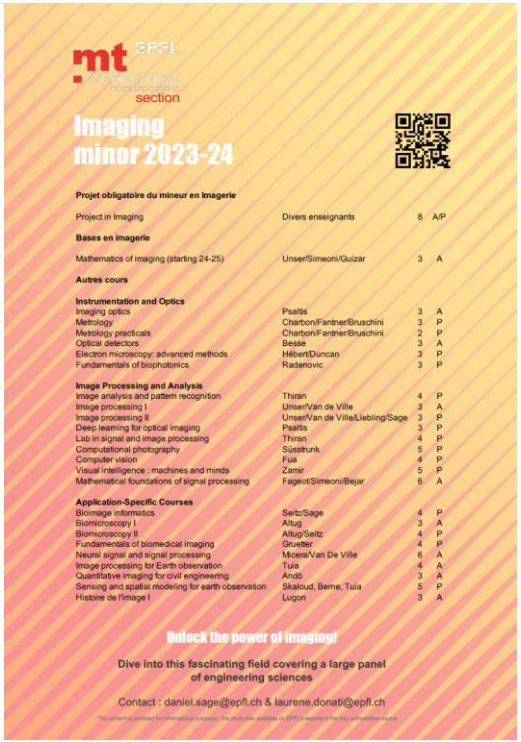
Projet obligatoire du mineur en Photonique

Project in photonics	Divers enseignants	10	A/P
Bases en photonique pour étudiants n'ayant aucune formation en photonique			
Ingenierie optique	Achouri/Martin O.	6	A
Foundations of photonics			
Basic integrated photonic components: fundamentals and simulations	Benea-Chelmus	4	A
Laser fundamentals and applications for engineers	Moser	3	P
Lasers: theory and modern applications	Moser Ch./Kippenberg	4	A
Nonlinear optics	Roke	3	A
Nonlinear optics for quantum technologies	Galland	4	A
Optics laboratories	Psaltis/Pu	3	P
Photonic systems and technology	Brès	4	P
Physics of photonic semiconductor devices	Grandjean	4	P
Quantum electrodynamics and quantum optics	Kippenberg	6	A
Quantum optics and quantum information	Brantut	6	P
Quantum physics III	Yazyev	6	A
Selected topics in advanced optics	Martin O.	3	A
Semiconductor physics and light-matter interaction	Bulfe	4	A
Advanced photonic transducers: classical and quantum applications	Benea-Chelmus	3	P
Applied photonics			
Fundamentals & processes for photovoltaic devices	Ballif	3	P
Fundamentals of biophotonics	Radenovic	3	P
Image processing I	Unser/Van de Ville	3	A
Image processing II	Liebling/Sage/Unser/Van de Ville	3	P
Imaging optics	Psaltis	3	P
Laser microprocessing	Hoffmann	2	P
Microfabrication technologies	Gijs/Bruggeir	4	A
Nanophotonics	Moselund	3	
Optical Design with ZEMAX OpticStudio	Pu	3	A
Optical detectors	Beese	3	A
Organic and printed electronics	Brand/Subramanian	2	P
Biomedical photonics			
Biomedical optics	Wagnières	3	A
Biomicroscopy I	Altug	3	A
Biomicroscopy II	Altug + Seitz A.	4	P
Photomedicine	Wagnières	2	P

Discover the world of photonics!

Explore cutting-edge technologies to control electrons and photons

Contact : olivier.martin@epfl.ch



Imaging minor 2023-24

Projet obligatoire du mineur en Imagerie

Project in Imaging	Divers enseignants	8	A/P
Bases en imagerie			
Mathematics of imaging (starting 24-25)	Unser/Simeoni/Guizar	3	A
Autres cours			
Instrumentation and Optics			
Imaging optics	Psaltis	3	A
Metrology	Charbon/Fantner/Bruschini	3	P
Metrology practicals	Charbon/Fantner/Bruschini	2	P
Optical detectors	Besse	3	A
Electron microscopy: advanced methods	Hébert/Duncan	3	P
Fundamentals of biophotonics	Radenovic	3	P
Image Processing and Analysis			
Image analysis and pattern recognition	Thiran	4	P
Image processing I	Unser/Van de Ville	3	A
Image processing II	Unser/Van de Ville/Liebling/Sage	3	P
Deep learning for optical imaging	Psaltis	3	P
Lab in signal and image processing	Thiran	4	P
Computational photography	Süsstrunk	5	P
Computer vision	Fua	4	P
Visual intelligence : machines and minds	Zamir	5	P
Mathematical foundations of signal processing	Fageot/Simeoni/Bejar	6	A
Application-Specific Courses			
Bioimage informatics	Seitz/Sage	4	P
Biomicroscopy I	Altug	3	A
Biomicroscopy II	Altug/Seitz	4	P
Fundamentals of biomedical imaging	Gruetter	4	P
Neural signal and signal processing	Micera/Van De Ville	6	A
Image processing for Earth observation	Tuia	4	A
Quantitative imaging for civil engineering	Andò	3	A
Sensing and spatial modeling for earth observation	Skaloud, Berne, Tuia	5	P
Histoire de l'image I	Lugon	3	A

Unlock the power of imaging!

Dive into this fascinating field covering a large panel of engineering sciences

Contact : daniel.sage@epfl.ch & laurene.donati@epfl.ch

Biomedical technologies minor 2023-24

Projet obligatoire du mineur en Technologies biomédicales

Project in biomedical technologies	Divers enseignants	8	A/P
Bases biomédicales			
Biophysics : physics of the cell	Manley	3	P
Cellular biology and biochemistry for engineers	Zufferey	4	A
Physiologie par systèmes	Roy	4	P
Seminar in physiology and instrumentation	Radenovic	2	A
Autres cours			
Analog circuits for biochip	Carrara/Schmid/Skrivervik	3	P
Applied biomedical signal processing	Lemay	4	A
Bioelectronics and biomedical microelectronics	Schmid	3	A
Bioimage informatics	Sage/Seitz	4	P
Basics in Bioinstrumentation *	Merten	4	A
Computational neurosciences : neuronal dynamics	Gerstner	5	P
Biomechanics of the cardiovascular system	Stergiopulos	3	P
Biomechanics of the musculoskeletal system	Pioletti	5	P
Biomedical optics	Wagnières G.	3	A
Biomicroscopy I	Altug	3	A
Biomicroscopy II	Altug+Seitz A.	4	P
Bio-nano-chip design	Carrara	3	A
Biophysics : physics of biological systems	Rahi Sahand J.	4	A
Fundamentals of biomedical imaging	Gruetter	4	P
Fundamentals of biophotonics	Radenovic A.	3	P
Fundamentals of biosensors and electronic biochips	C. Guiducci	3	A
Ingénierie optique	Achouri/Martin O.	6	A
Light, liquids and interfaces	Roke S.	4	A
Mechanobiology: how mechanics regulate life	Persat/Sakar	3	A
Microfabrication technologies	Brugger/Gijs	4	A
Nanobiotechnology and biophysics	Fiedz B.	3	P
Neural interfaces	Lacour	6	A
Neural signals and signal processing	Micera/Van De Ville	6	A
Neuroscience: cellular and circuit mechanisms	Crochet/Petersen	5	A
New tools & research strategies in personalized health	Trono	4	P
Numerical methods in biomechanics	Terrier A.	3	P
Sensors in medical instrumentation	Châtelat/Ionescu	3	P
Translational neuroengineering	Blanke/Courtine/Hummel/Micera	6	P

Experience the future of biomedical technologies !

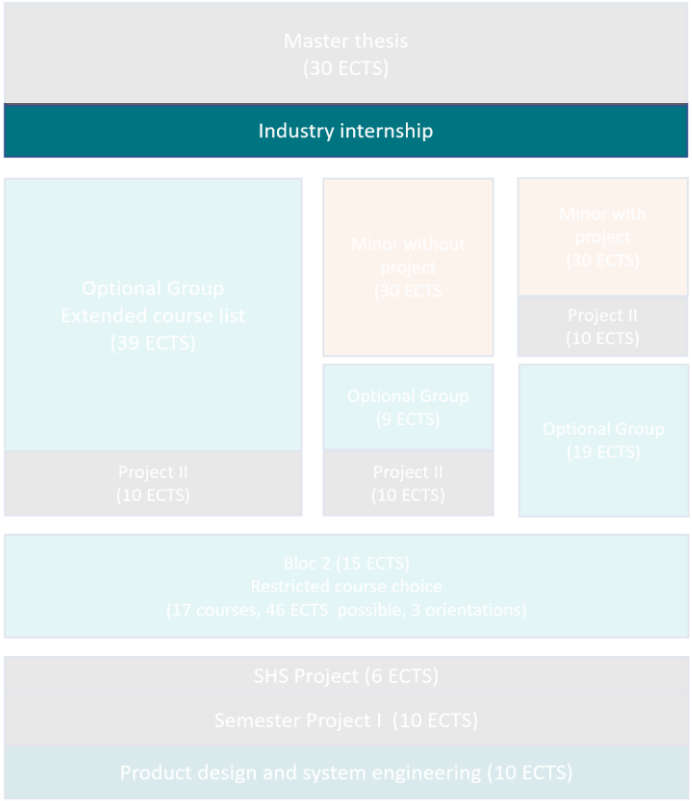
Join this program to transform the way we understand and treat the human body

Contact : carlotta.guiducci@epfl.ch

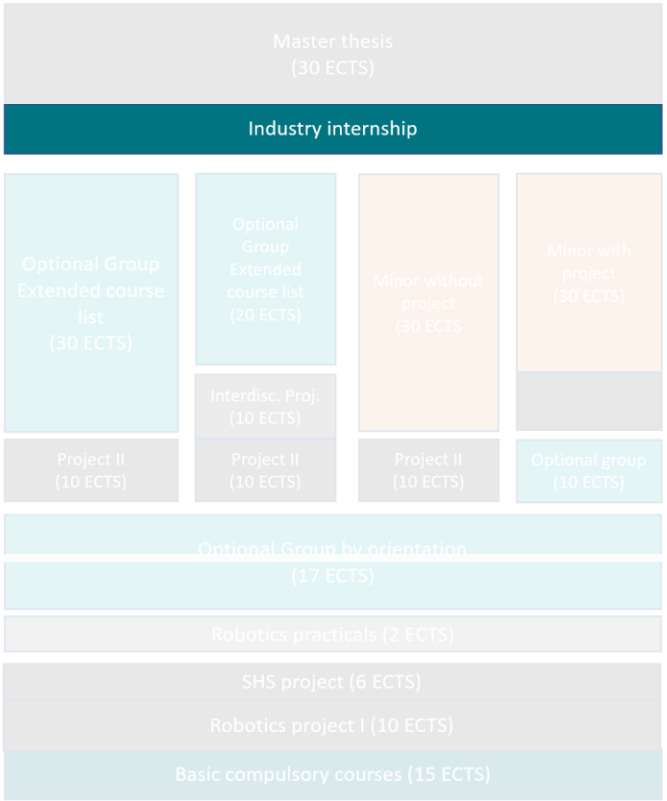
https://sti.epfl.ch/wp-content/uploads/2023/02/Mineur-Technologies-Biomedicales.pdf
https://sti.epfl.ch/wp-content/uploads/2023/02/Prsentation_Mineur-Photonique.pdf
https://imaging.epfl.ch/minor-in-imaging/

Industry Internship

Microenginering



Robotics



Mandatory Industry immersion: 2 options

Internship

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

Master project in industry

- A research project in the company
- Student applies the competences aquired during his master
- Supervised by a Professor **from his section**
- Written report and oral defense
- **Monthly feedback to Professor**
- 25 week duration (+1 week vacation)

When to place your internship

Detailed info session:
Thursday November 2nd
8:00 – 09:15

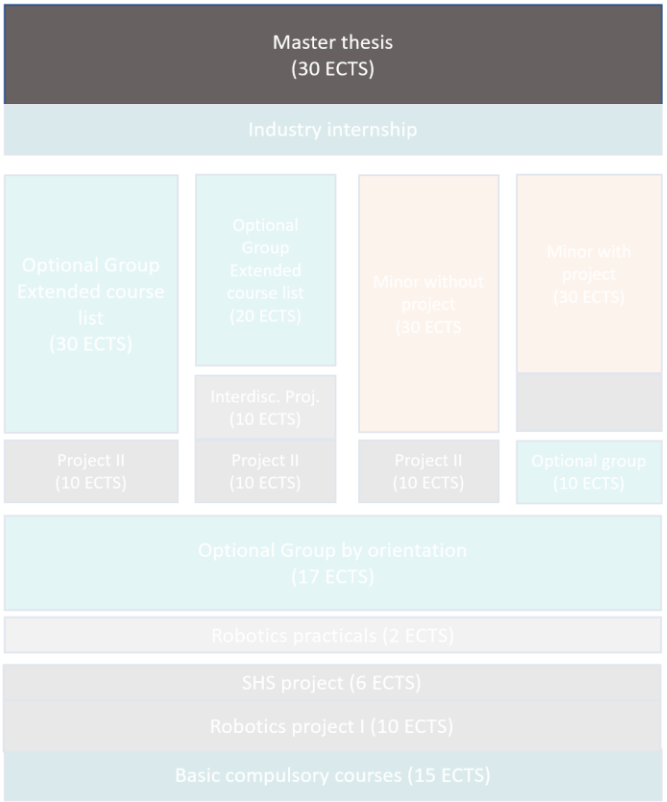
STI Industry internship coordinator:
Hind.Klinke@epfl.ch

Master thesis (PDM) in academia in foreign Universities: 25 weeks

Master thesis

Microenginering

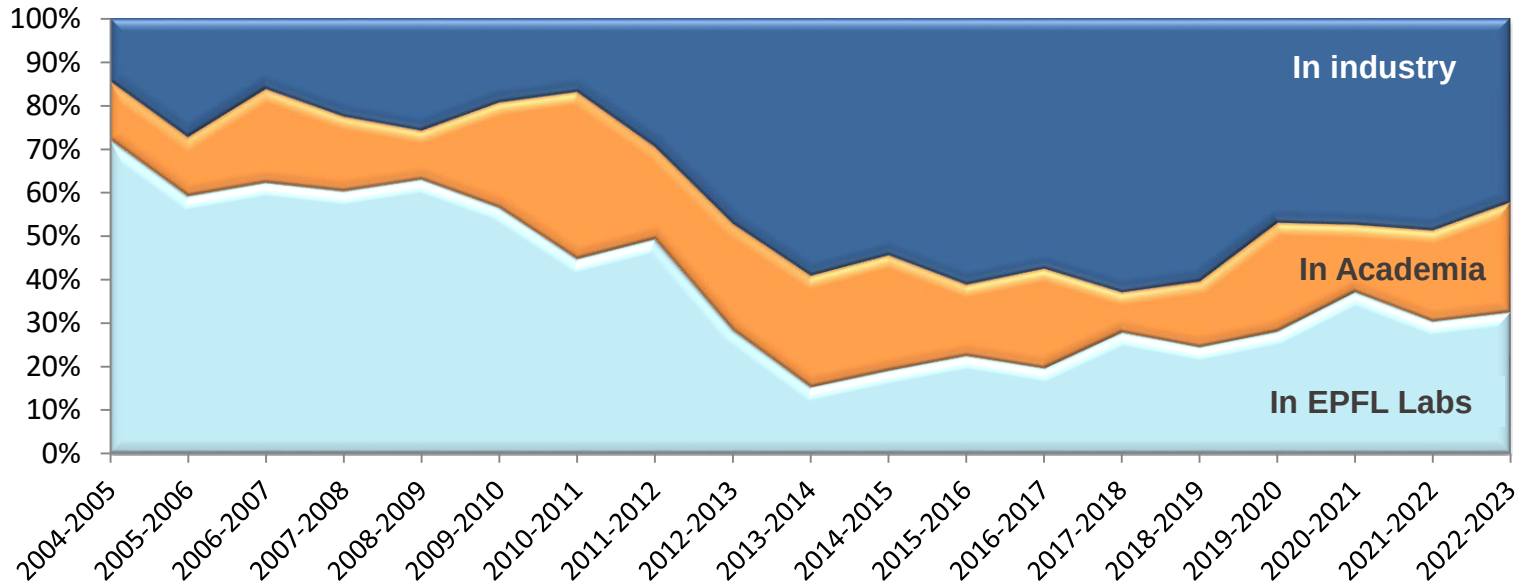
Robotics



Master thesis location

Students have different option to complete the Master thesis:

- In a lab @ EPFL
- In a foreign University, co-supervised by a Prof from EPFL
- In Industry, co-supervised by a Prof from EPFL



Master projects 2021-2022

Academic outreach

Brigham and Women's Hospital (BWH), Harvard Medical School
Brigham and Women's Hospital, Harvard Medical School
California Institute of Technology
Caltech - California Institute of Technology
ETH (Robotics and Perception Group, with Prof. Scaramuzza) jointly wi
Georgia Institute of Technology
Harvard
Harvard John A. Paulson School of Engineering and Applied Sciences
Harvard SEAS - Biodesign lab
Harvard University - School of Engineering and Applied Sciences
Imperial College
Imperial College London
Korea Advanced Institute of Sciences and Technology
Max Planck Institute fur Informatik
National University Singapore
Polytechnique Montreal
Stanford
Stanford University
Technical University of Denmark
Technical University of Denmark (DTU)
UC Berkeley
Université de Genève
Universiteit van Amsterdam
University of Basel
University of British Columbia
University of California, San Diego
University of Geneva
University of Illinois at Urbana-Champaign
University of Oregon-Knight Campus

Industry outreach

Alpine Intuition Sàrl
Alpiq SA
Artiria Medical SA
Astek
autonomyo
Baracoda
Bionomous Sàrl
Bulgari Horlogerie
Carevature Medical
Carl Zeiss AG
Cartier Opérations - Branch of Richemont I
CleanGreens Solution SA
CSEM - Centre suisse d'électronique et de
CSEM - Centre suisse d'électronique et de
CSEM S.A
Cyberbotics Ltd.
Demaurex SA
ecoRobotix
Empa
European Southern Observatory
Expedia Lodging Partner Services
EyeOn Switzerland
Fusion Lab Technologies SARL
GSK
Hublot S.A.
Hydromea
IBM Research GmbH
ID Quantique SA
IEP Innovation Park Foundation
Illuin Technology
Innovation Park Foundation (EIP)
Isochronic AG
KEP Innovation Center
Logitech Europe SA
London Centre for Nanotechnology
Magma Learning
Mantis Technologies GmbH
Manufacture des Montres Rolex SA
Medtronic Europe Sarl
Melexis Technologies SA
Merck Serono SA
Metyos
MotionTech
Neurorestore
Neurorestore (CHUV)
Observatoire de Genève
Omnisens SA
Onward Medical SA
opticode.ch
Philips High Tech Campus Eindhoven
Readily3D SA
Rigi Technologies
Rigitech
Rolex
Schindler Aufzüge AG
Sensirion AG
Technis SA
Tecma Industrias
TWIICE SA
VLC Photonics
Volocopter Gmbh

EPFL
mt
microtechnique
microengineering
section

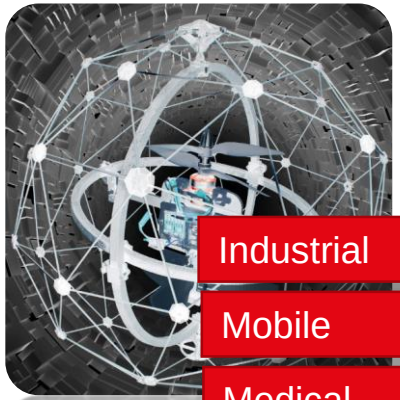
Master projects guidelines

- Calendar
- Choosing a master project in a laboratory
- Master project in another university
- Project's objectives
- Master projects in Industry (PDMe)
- Registration
- Hand-in procedure
- Evaluation method
- Student prizes

https://sti.epfl.ch/smt/master-projects-guidelines/

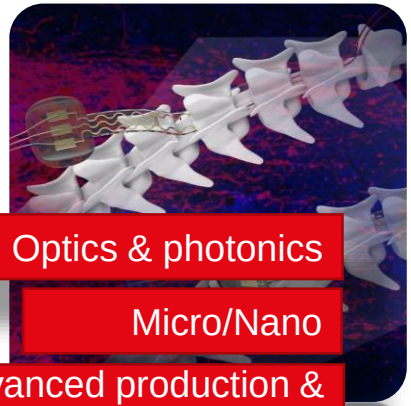
Specifics about the 2 Masters

Robotics master



- Industrial
- Mobile
- Medical

Microengineering master



- Optics & photonics
- Micro/Nano
- Advanced production & manufacturing

EPFL
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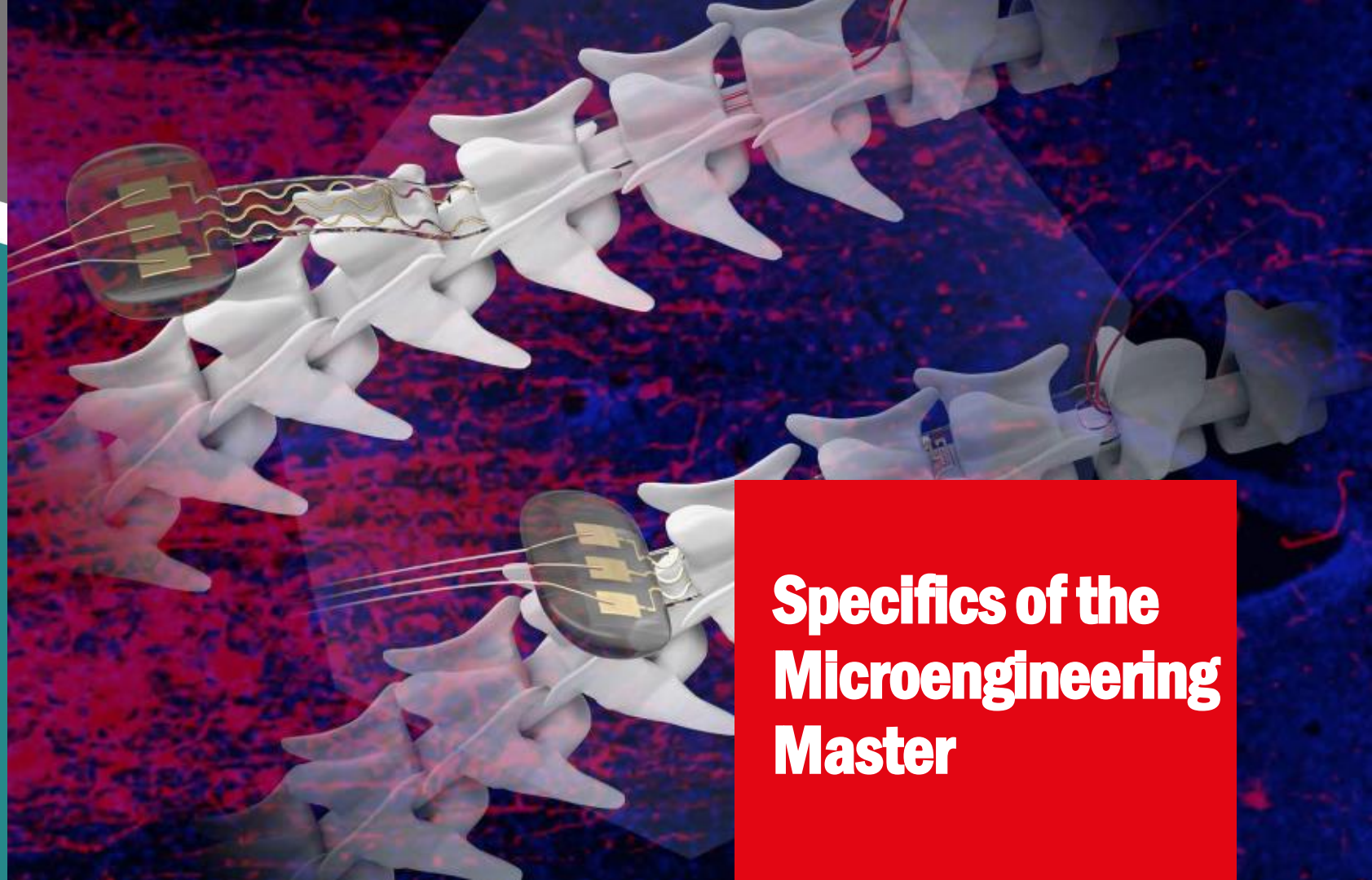
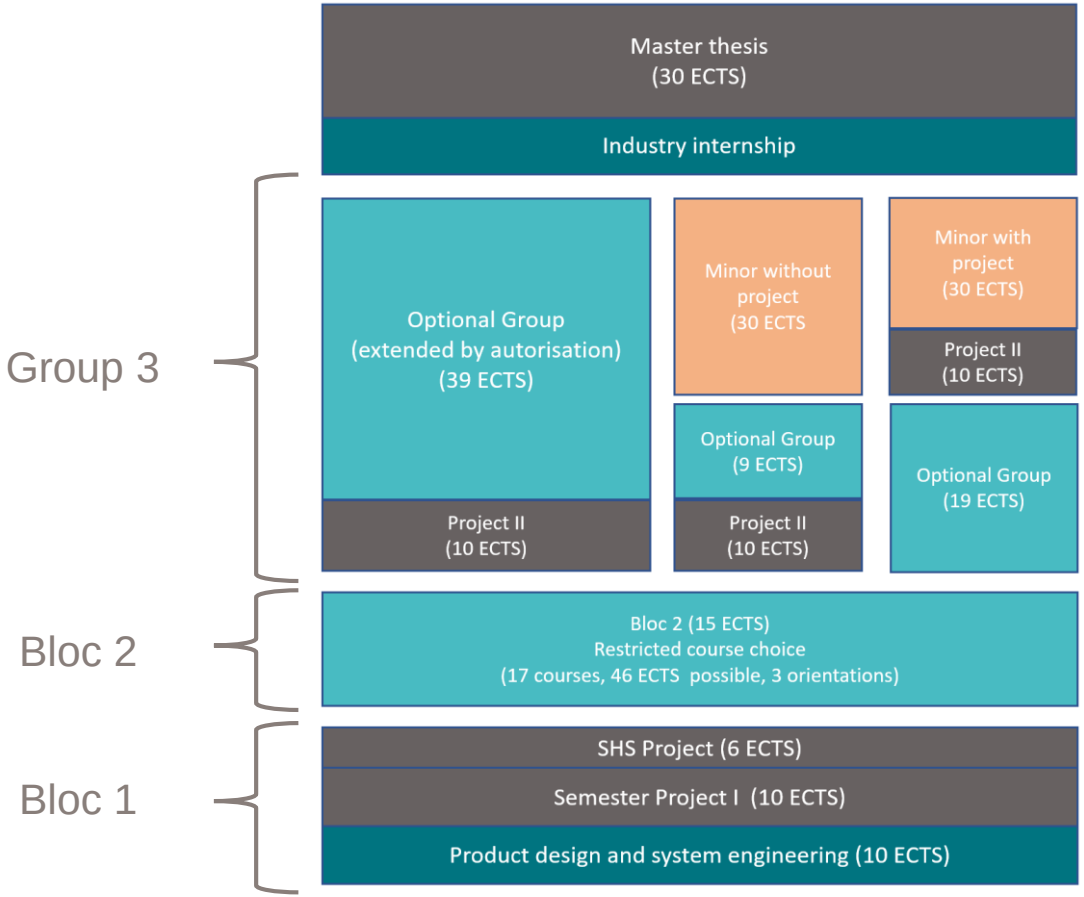
microtechnique
microengineering
section



Specifics of the Microengineering Master

Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Master Program structure



Products Design and Systems Engineering

Foundational course in the first semester letting groups of students create their own product from concept tu prototype, including a first marketing plan.

With invited speakers from Academia and Industry.

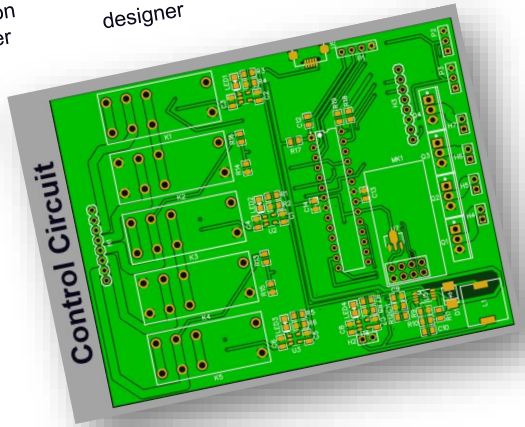
Pablo

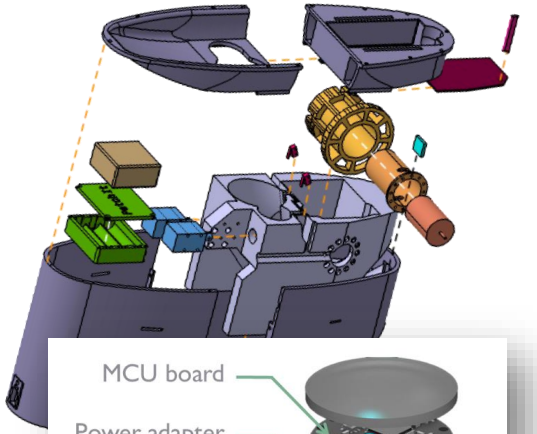
Andrea
Propulsion Designer

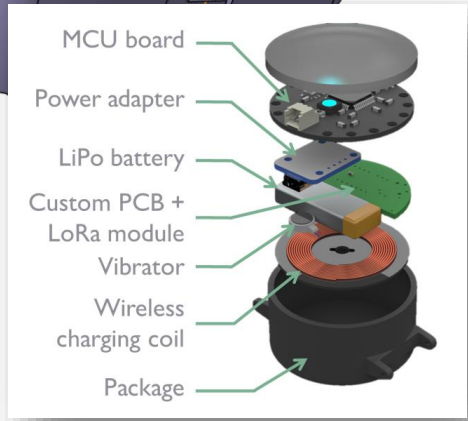
Charlotte
CAD designer

Hugo
Programmer

Florian
Business developer



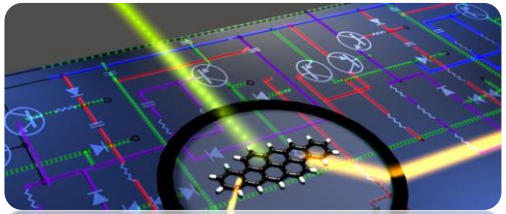


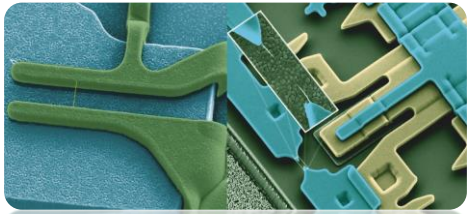


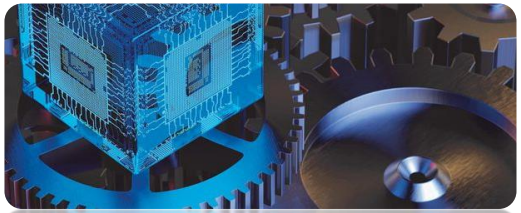
Orientations – Microengineering Master

Orientations are meant as **guidelines** to help students in their course choices.

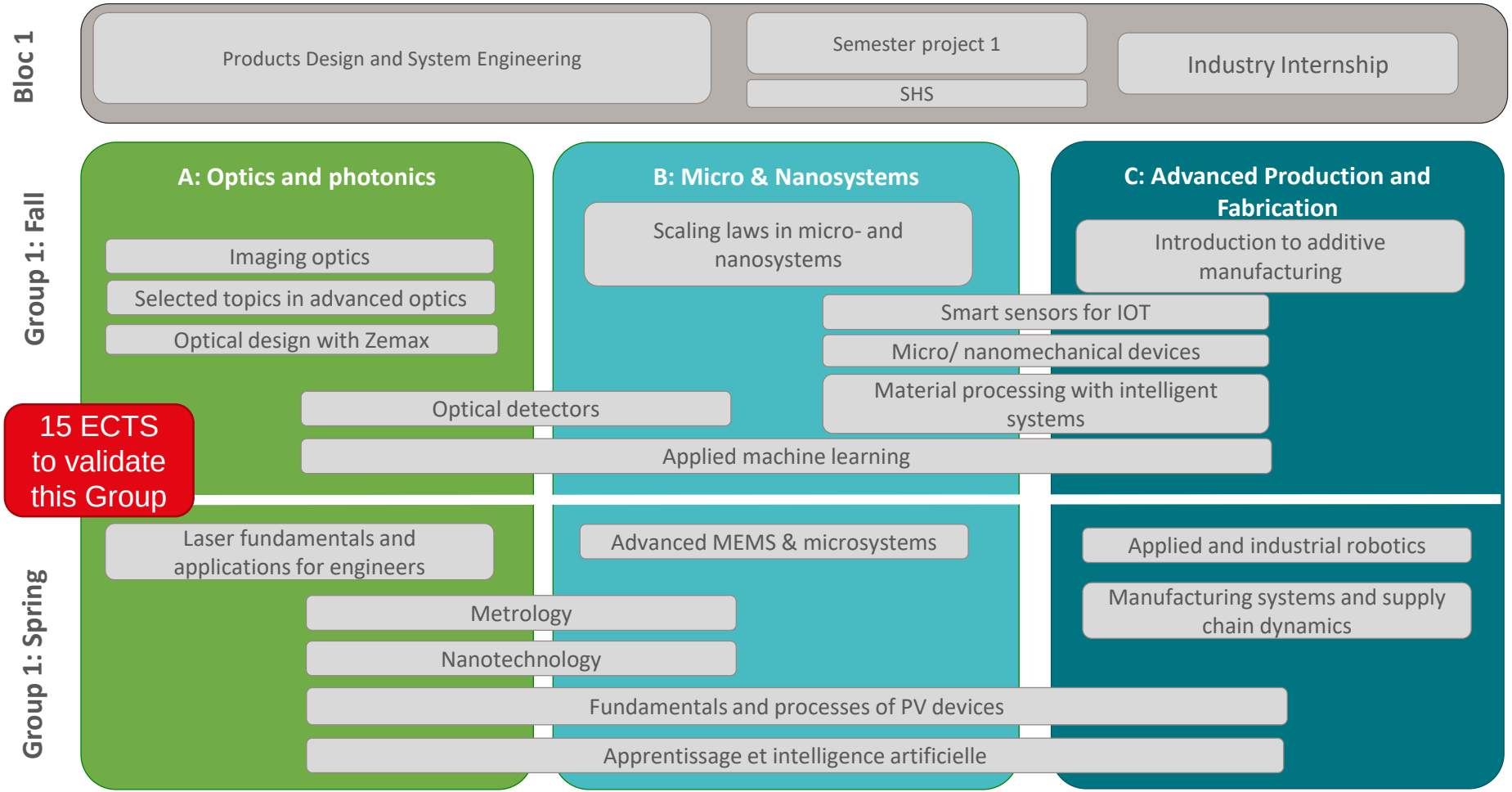
A Optics and Photonics	B Micro ans Nanosystems	C Advanced and Production and Fabrication



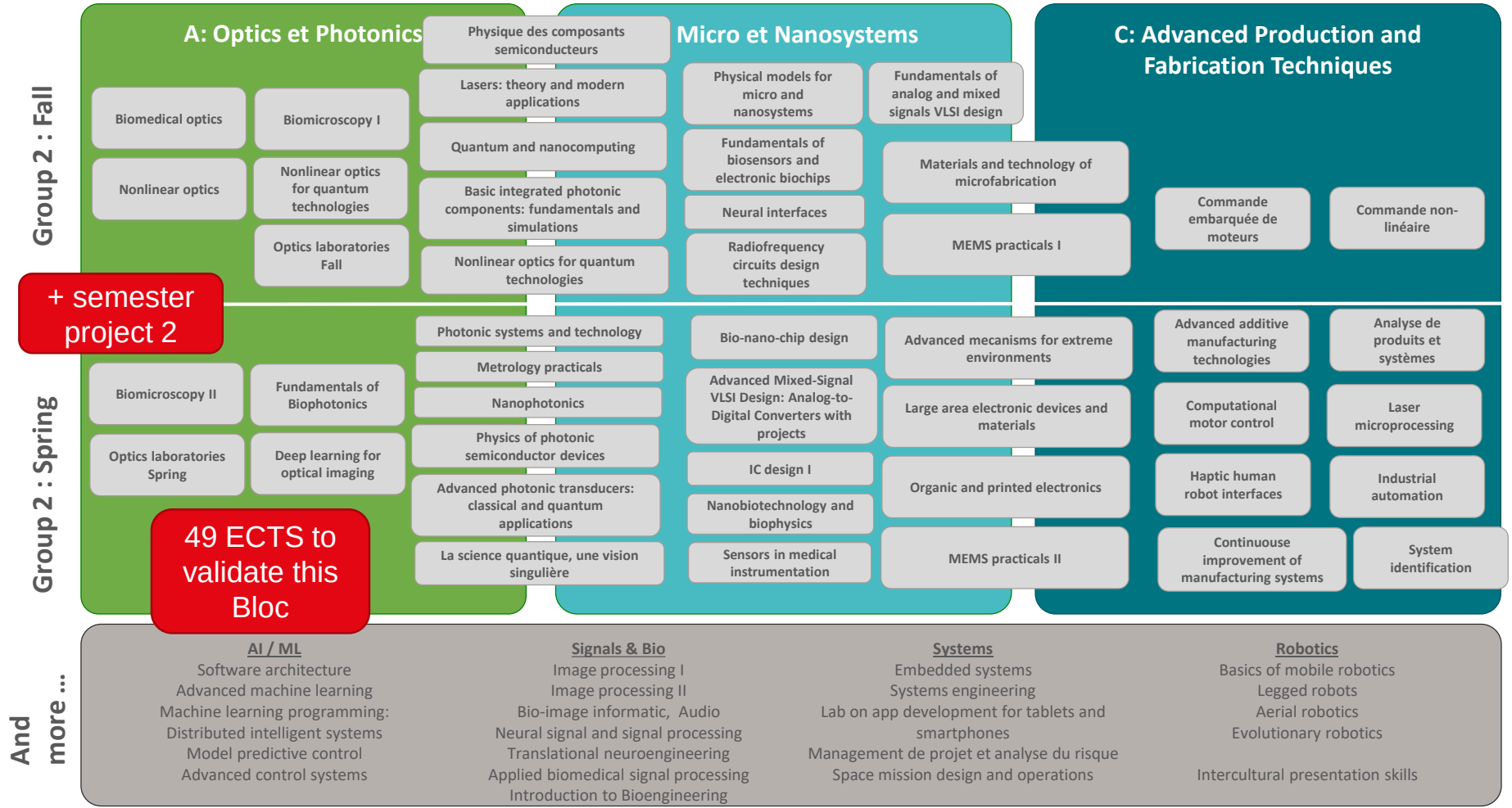




Orientations - Master Microengineering

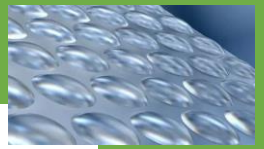


Orientations - Master Microengineering



EPFL mt microtechnique microengineering section

Imaging

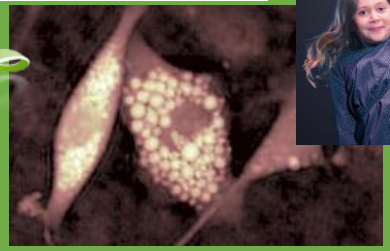


REGENT LIGHTING

SÜSS MicroOptics

lyncée tec

NANOLIVE Looking inside life

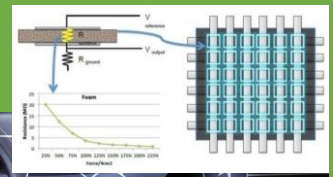


photon focus

Example of
Industry Players
Optics & Photonics

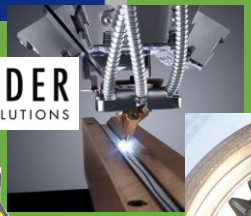
Smart fabric printing

SEFAR



TRUMPF

SYNOVA



SCHNYDER GEAR CUTTING SOLUTIONS

COHERENT

LUMENTUM

Laser cutting

teltec systems ag

Laser marking

EPFL mt microtechnique microengineering section

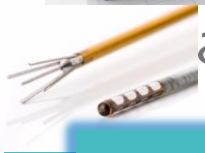
Example of Industry Players **Micro & Nanosystems**

Microfab, MEMS, Sensors and Packaging

SUSS MicroOptics

csem

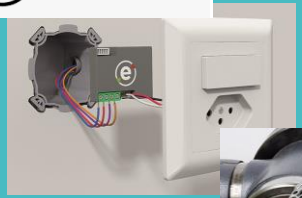
life.augmented



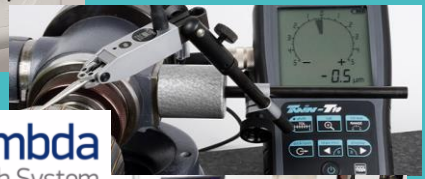
aleva NEUROTHERAPEUTICS

Systems Engineering

esmart



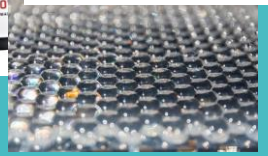
TESA TECHNOLOGY



Lambda Health System

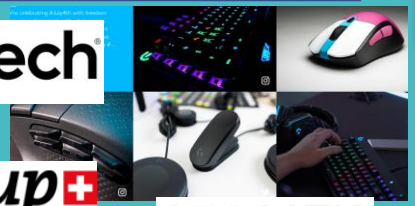
EMS ELECTRO MEDICAL SYSTEMS

insolight



Sensors, Wireless and IOT

logitech



Gaitup

GEOSATIS securing people

Watchmaking

BVLGARI

ROLEX

EPFL mt microtechnique microengineering section

Advanced manufacturing

BÜHLER

csem

Supply chain

ROLEX

Nestlé NESPRESSO

Cartier

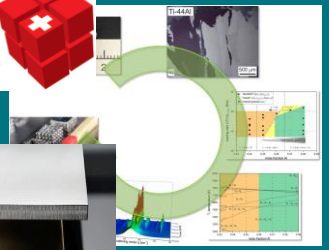
PHILIP MORRIS INTERNATIONAL

BOBST

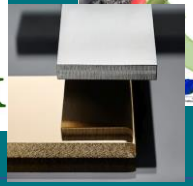
Example of Industry players

Advanced Manufacturing & Production

EMPA



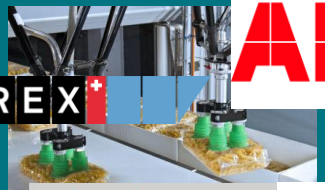
ROLEX



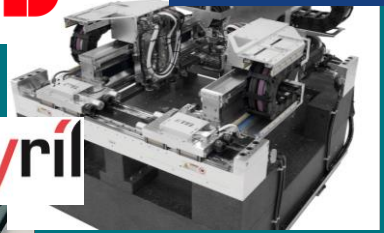
Materials processing

DEMAUREX

ABB



ETEL



AICA

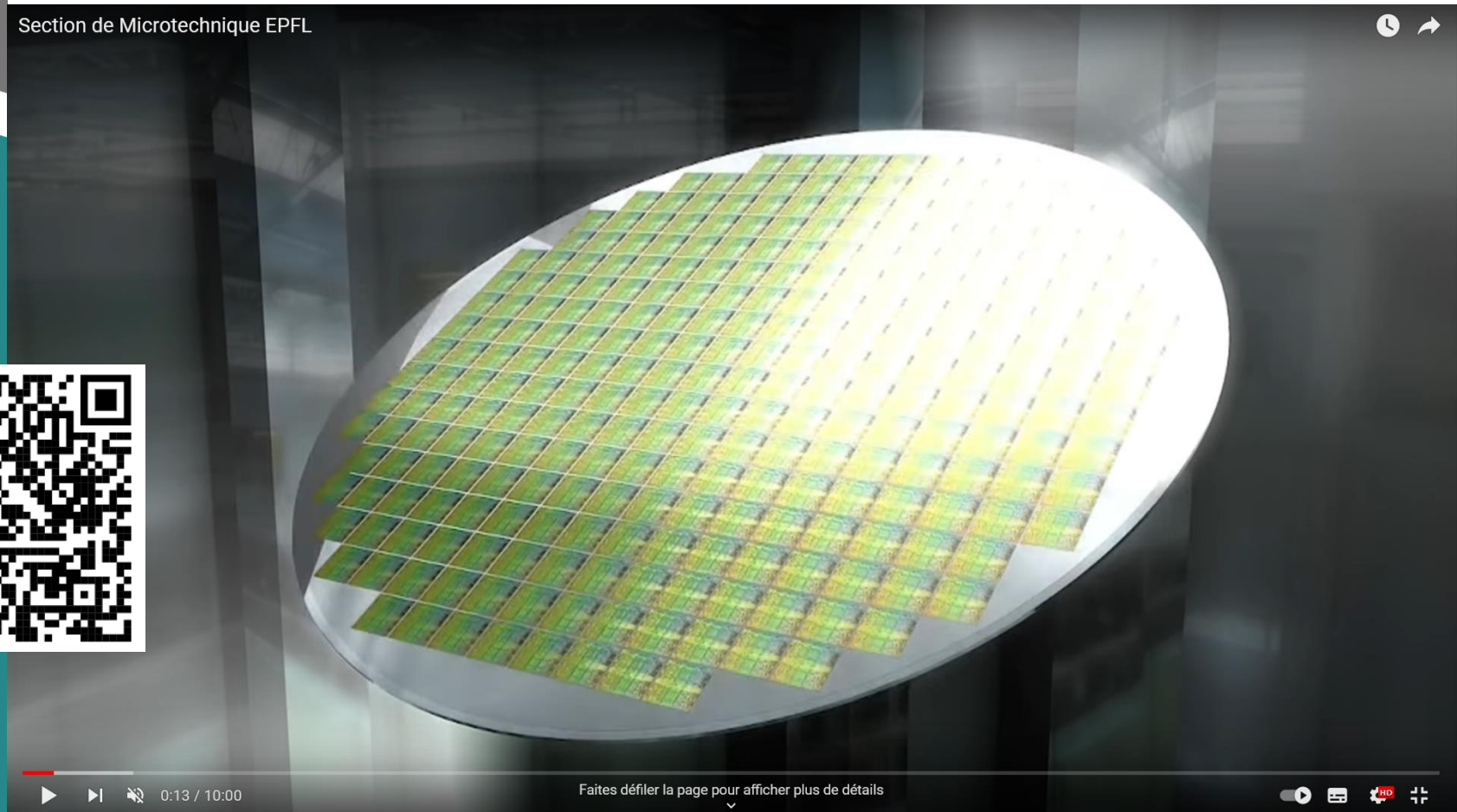
Asycube
Flexible feeders

asyril

Industrial robotics

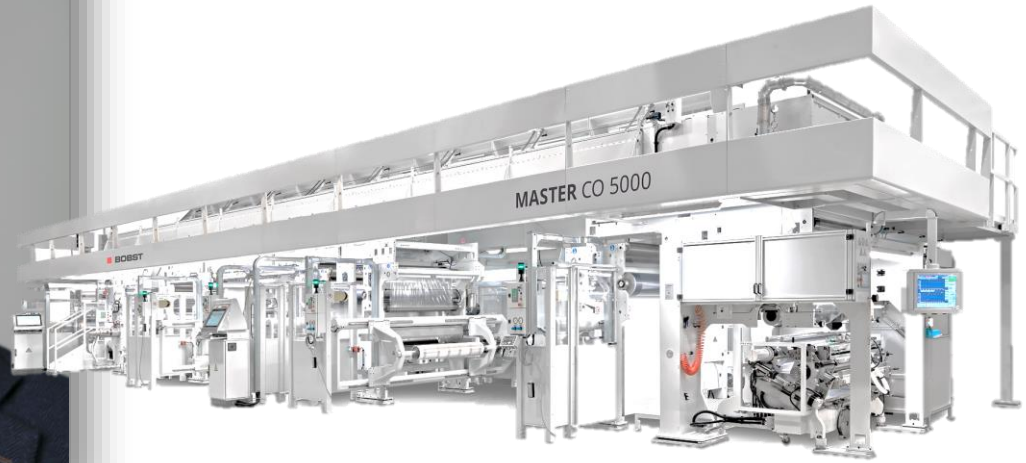
EPFL
mt
microtechnique
microengineering
section

Short Movie to learn more



Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Alumni Testimonies



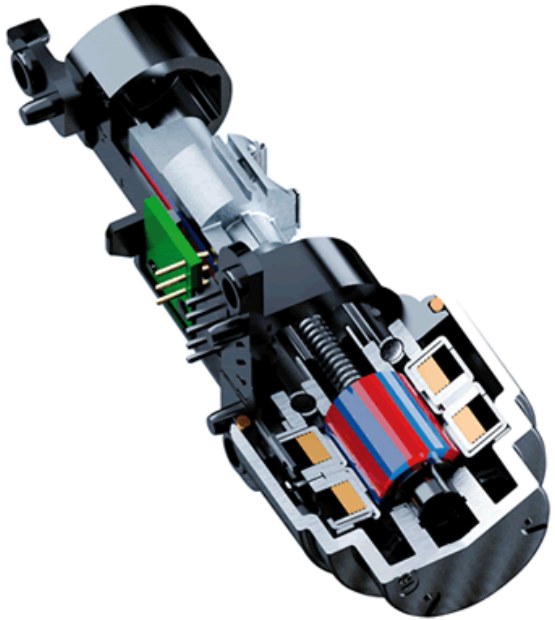
Léonard Badet
Head of Group Technology – Bobst
Master Microtechnique in 2017

BOBST

Alumni Testimonies

Damien Wittwer
Business Unit Manager Associate
Master Microtechnique in 2010

SONCEBOZ



https://tube.switch.ch/videos/J6tEwLIxYr

Alumni Testimonies

Adrien Briod
Founder and CTO
Master Microtechnique in 2009
Doctoral thesis in 2013

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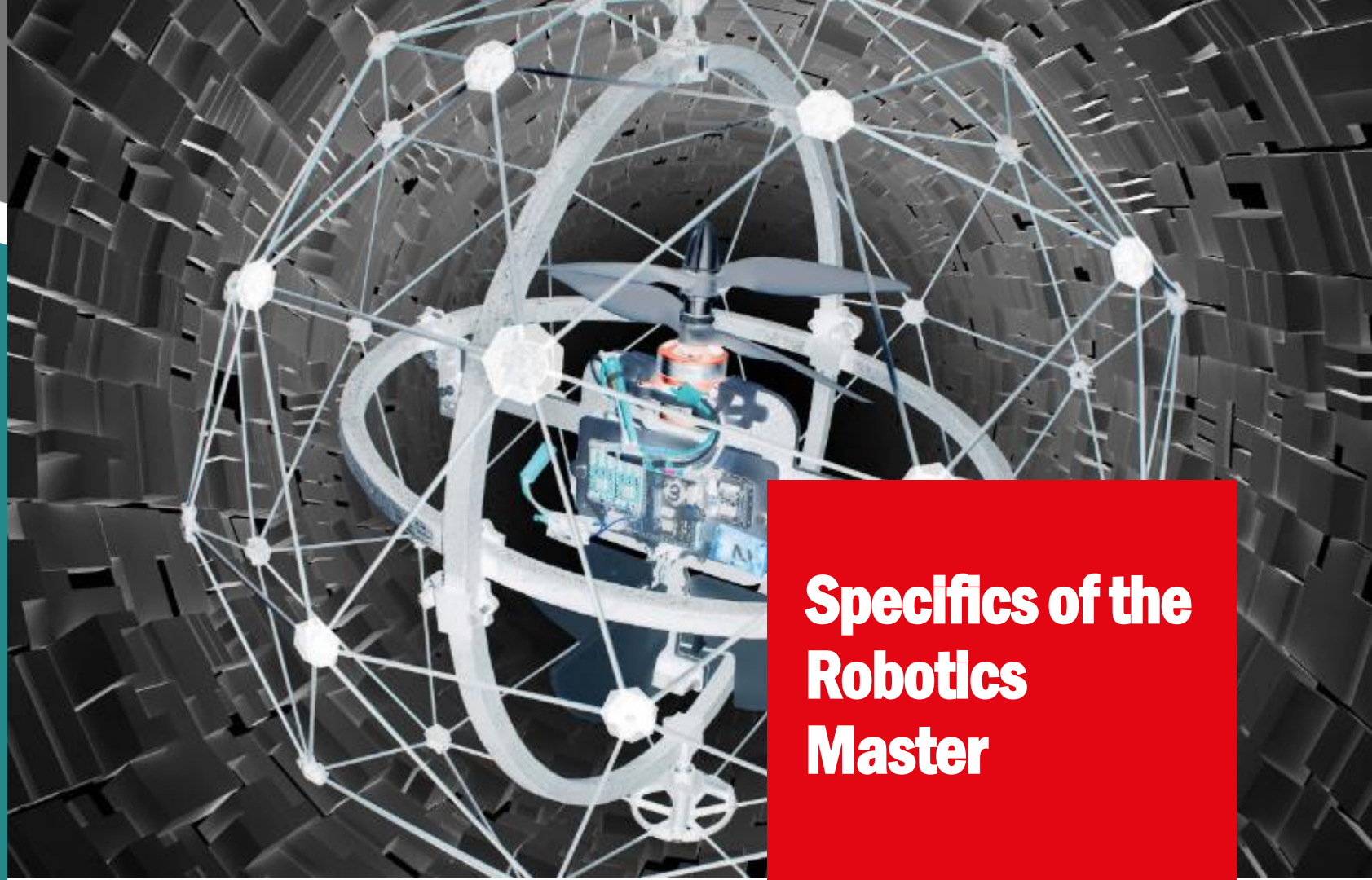
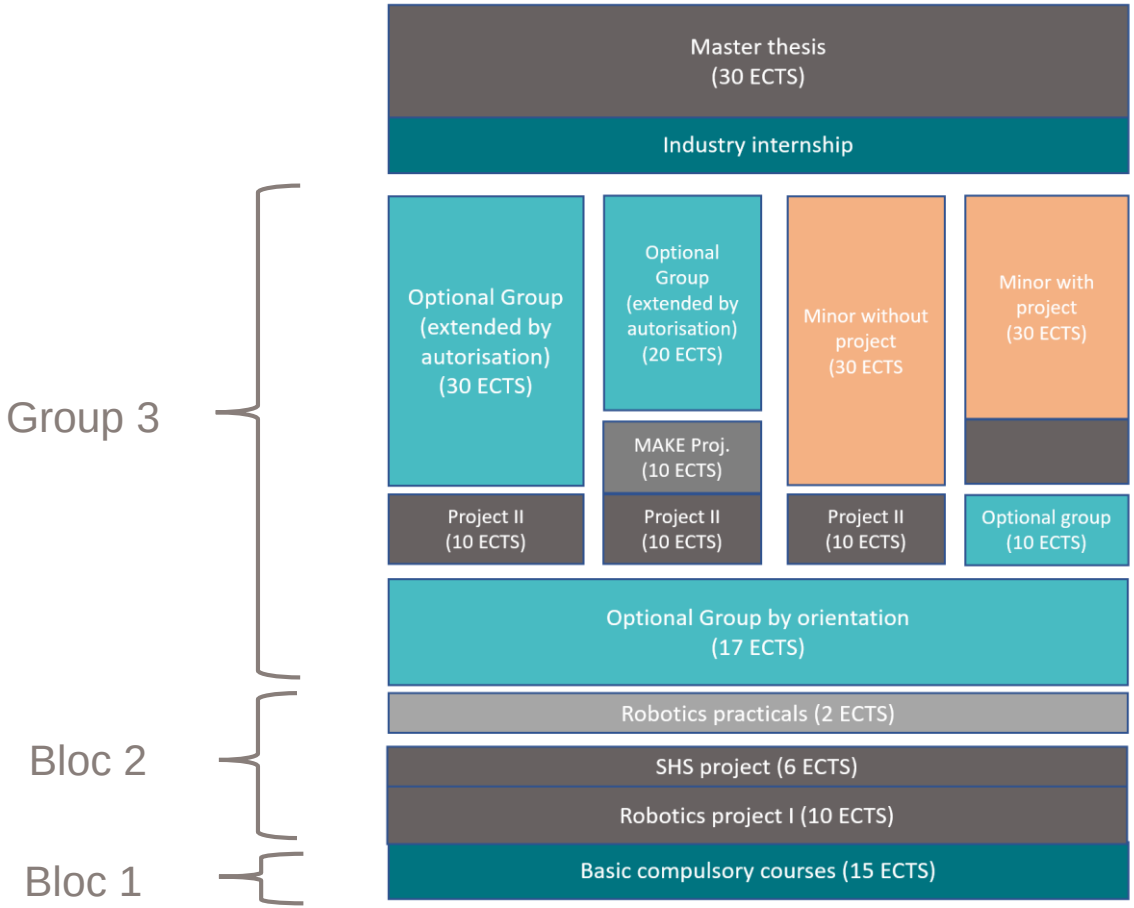
section



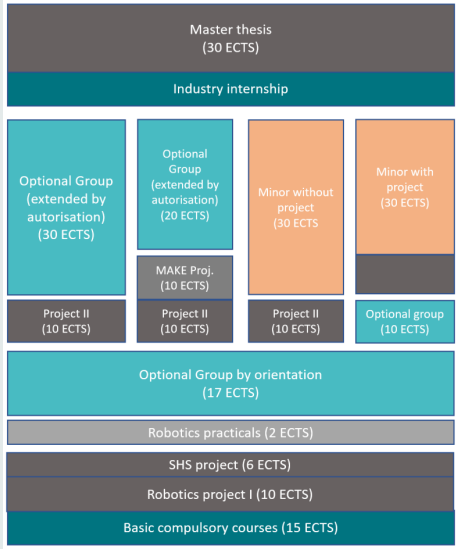
Specifics of the Robotics Master

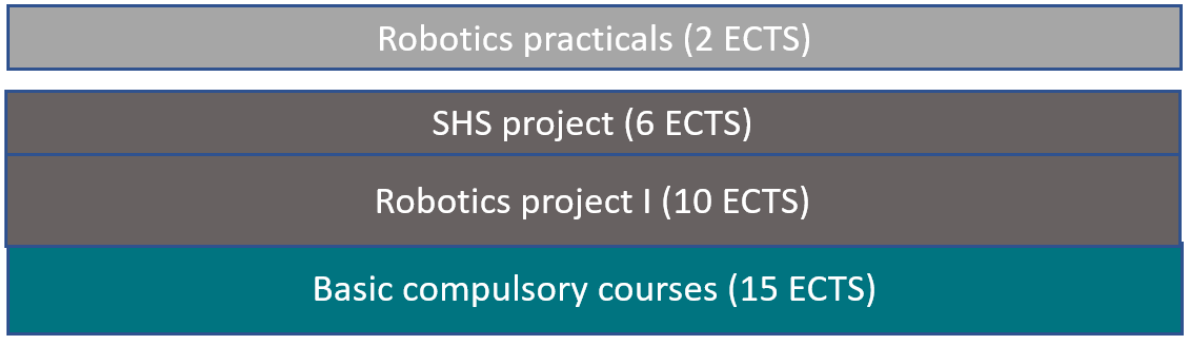
Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Master Program structure



Structure


Master thesis
(30 ECTS)
Industry internship
Optional Group (extended by autorisation) (30 ECTS)
Optional Group (extended by autorisation) (20 ECTS)
MAKE Proj. (10 ECTS)
Minor without project (30 ECTS
Minor with project (30 ECTS)
Project II (10 ECTS)
Project II (10 ECTS)
Project II (10 ECTS)
Optional group (10 ECTS)
Optional Group by orientation (17 ECTS)
Robotics practicals (2 ECTS)
SHS project (6 ECTS)
Robotics project I (10 ECTS)
Basic compulsory courses (15 ECTS)


Robotics practicals (2 ECTS)
SHS project (6 ECTS)
Robotics project I (10 ECTS)
Basic compulsory courses (15 ECTS)

Compulsory courses

Foundations :

- Basics of Mobile Robotics (4 ECTS; Mondada) – fall
- Basics of robotics for manipulation (3 ECTS; Bouri) – fall

Algorithms and Methods for Robotics :

- Applied machine learning (4 ECTS; Billard) – fall
- Model Predictive Control (4 ECTS; Jones) – fall

Practicals:

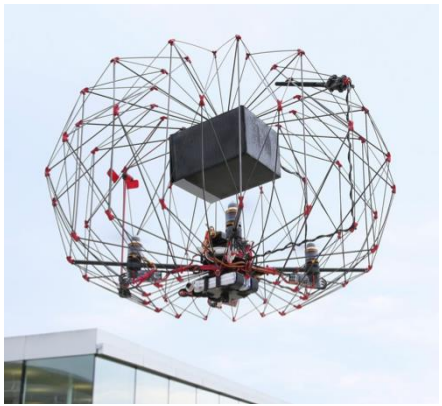
- Robotics Practicals (2 ECTS; Mondada + all) - spring

Orientations

17 optional credits chosen among the optional courses of the chosen orientation, then free choice in robotics options.

Industrial Robotics

Medical Robotics

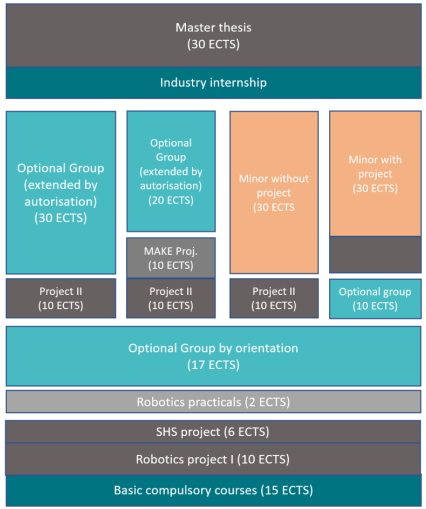


Mobile robotics

Orientations

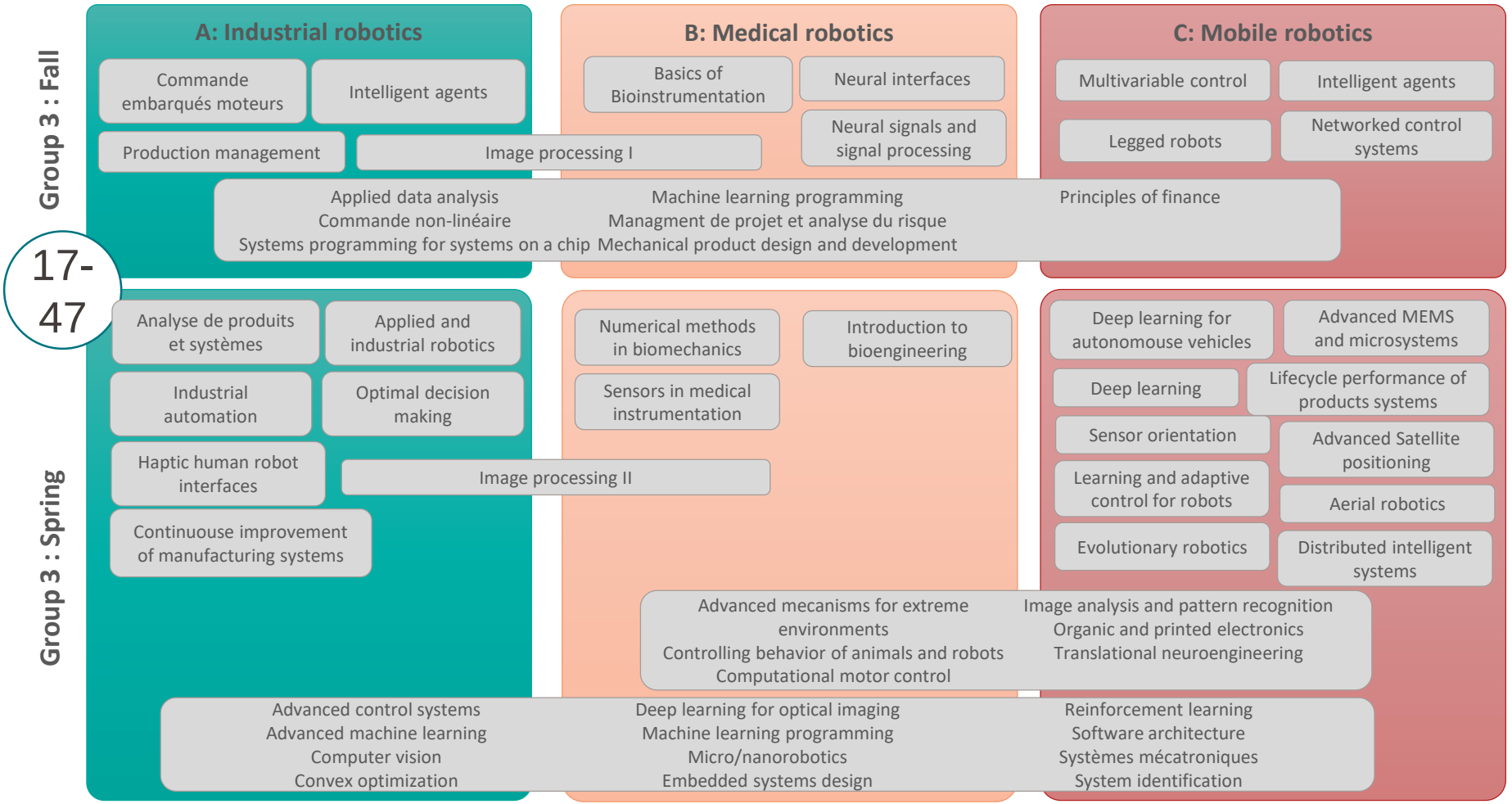
Students must choose 17 ECTS of optional courses in one of these three orientations:

A Industrial robotics
B Medical robotics
C Mobile robotics

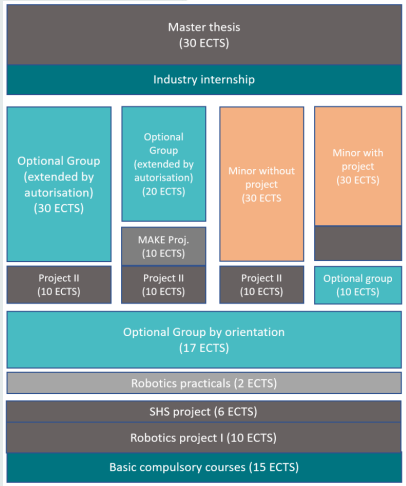


Groupe à options
Grand choix de cours
(17 ECTS)

Master in Robotics - Orientations

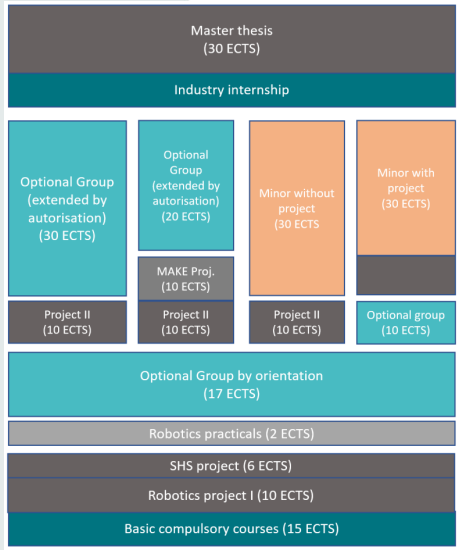


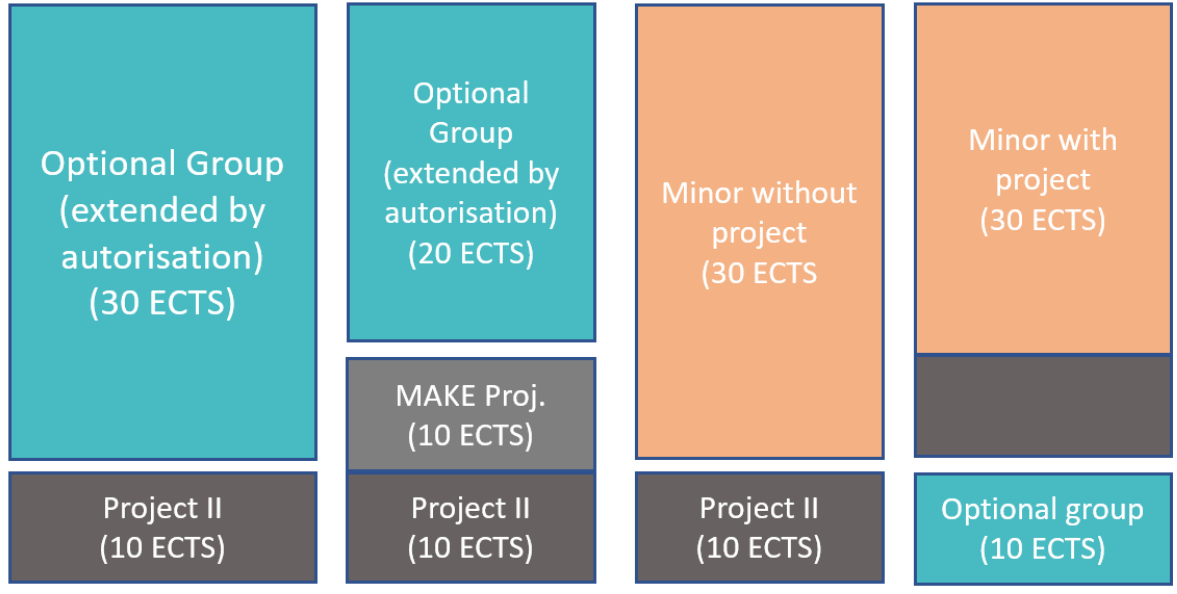
Orientation courses examples



2021-2022	ROBOTICS - Options		
Code	Matières	Enseignants	Crédits
MICRO-502	Aerial robotics	Floreano	3
MICRO-515	Evolutionary robotics	Floreano	3
MICRO-570	Advanced machine learning	Billard	4
EE-559	Deep learning	Fleuret	4
MICRO-514	Flexible bioelectronics	Lacour S.	4
EE-451	Image analysis and pattern recognition	Thiran J.-P.	4
MICRO-462	Learning and adaptative control for robots	Billard	4
MICRO-455	Applied machine learning	Billard	4
MICRO-553	Haptic human robot interfaces	Bouri	3
MICRO-401	Machine learning programming	Billard	2
BIOENG-404	Analysis and modelling of locomotion	Aminian/Ijspeert/Courtine	4
BIOENG-456	Controlling behavior in animals and robots	Ramdya	4
CIVIL-459	Deep learning for autonomous vehicles	Alexandre Alahi	6
ENG-466	Distributed intelligent systems	Martinoli	5
CS-487	Industrial automation	Tournier/Sommer	3
MICRO-507	Legged robots	Ijspeert	3
ENV-548	Sensor orientation	Skaloud	4

Free options





Alumni careers

Careers after EPFL's MA Program in Robotics

ROLEX

CERN

HARVARD UNIVERSITY

Meta

swisscom

UNIVERSITY OF OXFORD

TESLA

BLUE ORIGIN

open web technology

ETH zürich

logitech

AMV botics

CREDIT SUISSE

Imperial College London

FLYBOTIX professional inspection drones

FLYABILITY

PHILIP MORRIS INTERNATIONAL

Alumni careers (graduated in 2020 and 2021)

42matters	EPFL	Philip Morris
Aircall	ETHZ	Pilatus Aircraft Ltd
Alpine Intuition	Flyability	Pix4D
Alpine Intuition	Flybotix	Precitrame Machines SA
Anaglyph Ltd	Freshape	Qwestive
ANYBotics	GF Machining Solutions	Rolex
Bain & Company	Hamilton Medical	Scandit
Beaver Innovation	Harvard University	SCS - Supercomputing Systems AG
Biped AI	Imperial College	Selexis SA
BLUE ORIGIN	Koenigsegg Automotive AB	SHL Medical
Capgemini	Kudelski Group	Sonova Group
CERN	LAAS-CNRS	Spes Robotics
China Nanhu Academy of Electronics and Information Technology	Logitech	Strategy&
	Magnebotix AG	Swisscom
ClearSpace	Meta	Technis
CORTEXIA	Metaphysiks Engineering SA	Tesla
Credit Suisse	Mikron	Typeless
Datwyler Group	MOBBOT	Universidad del País Vasco
Décovi SA	myBrain Technologies	Université Paris-Saclay
DragonBox Kahoot!	OHB SE	University of Oxford
ei3	Omnisense SA	USI Università della Svizzera italiana
Embedded Factory	Open Web Technology	Wearin'

Short Movie to learn more

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microengineering
section

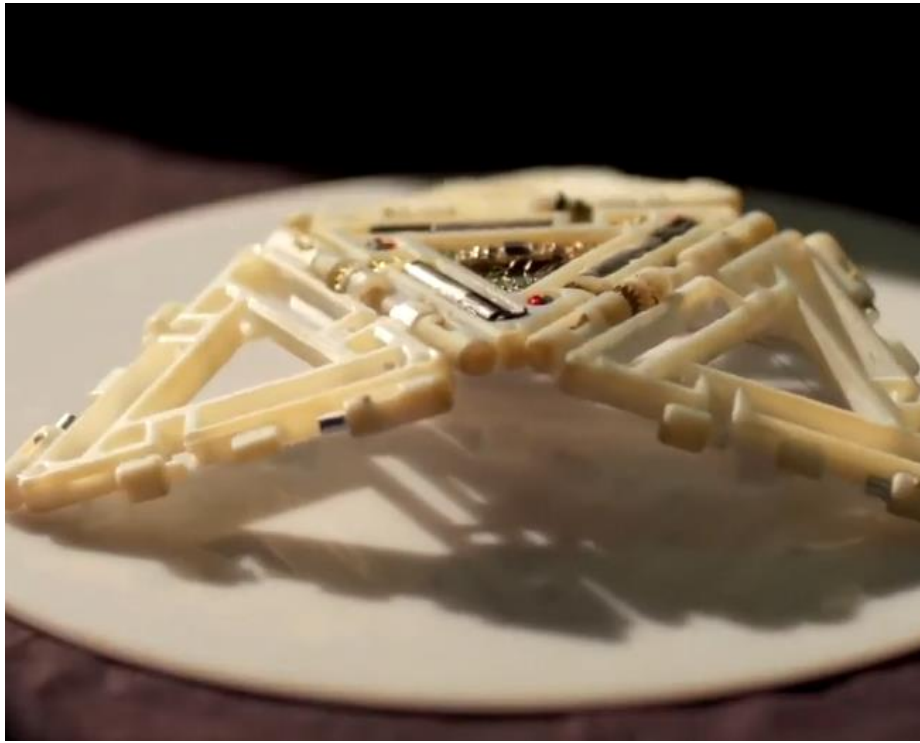
Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

Student Testimony

Sébastien de Rivaz
about the Robotics Master

Student Testimony

Arwen Blanche Giraud
about the Robotics Master



Alumni Testimonies

Adrien Briod
Founder and CTO
Master Microtechnique terminé en 2009
Thès doctorat EPFL 2013

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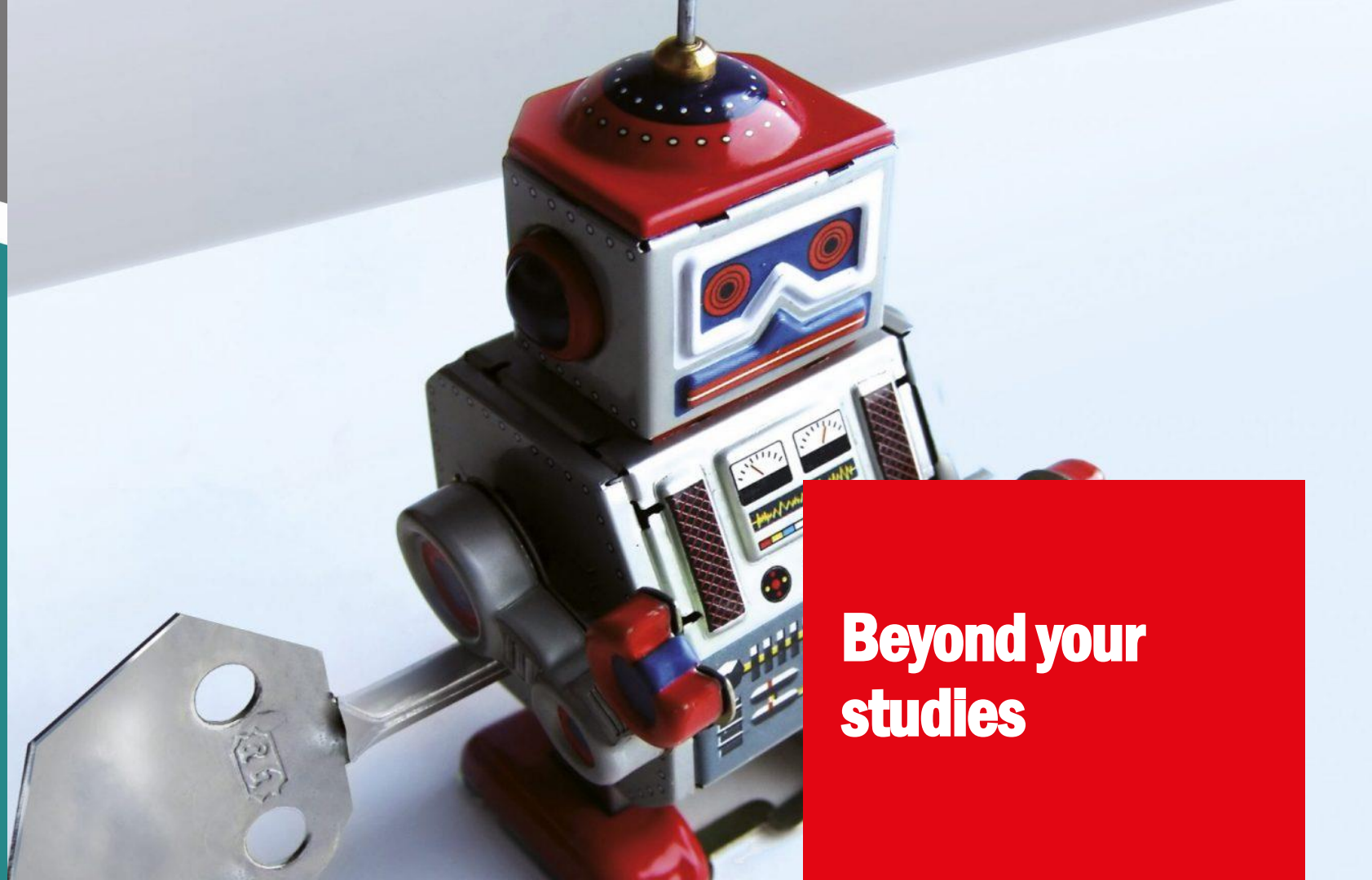

Beyond your studies

Faculté des Sciences
et Techniques
de l'Ingénieur (STI)

MAKE Projects: Fantastic team effort

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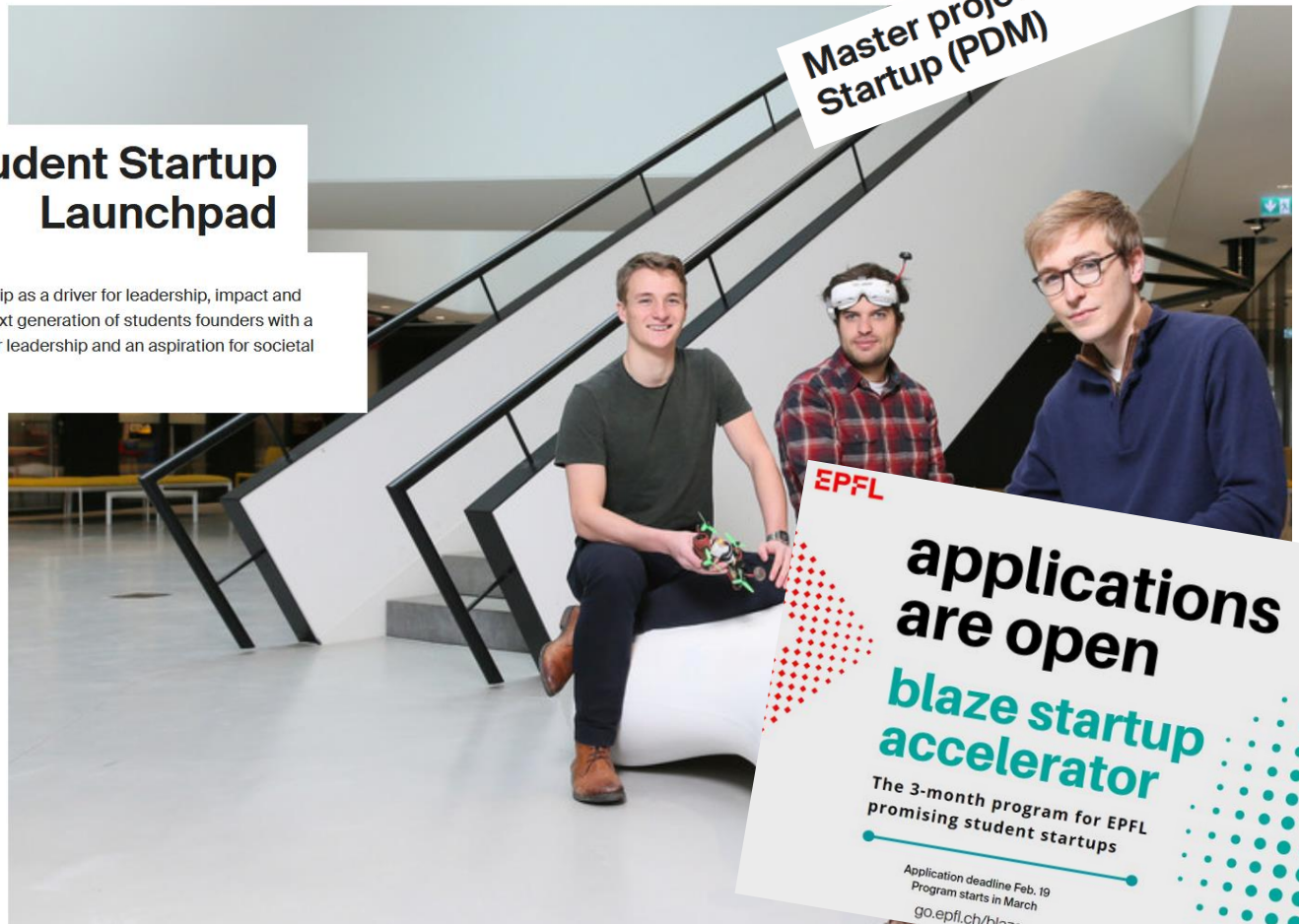
section

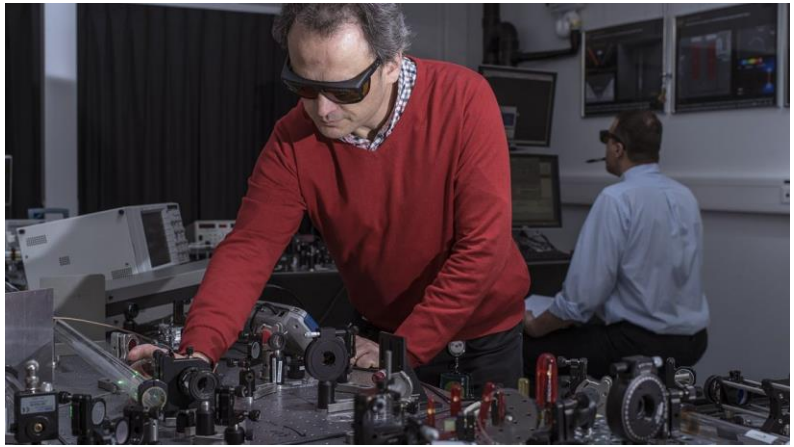
Entrepreneurship !

Student Startup Launchpad

We foster student entrepreneurship as a driver for leadership, impact and innovation. We are building the next generation of students founders with a drive for excellence, an instinct for leadership and an aspiration for societal impact.



Research - IEM to host your projects



IEM covers the following major technical fields:

- Electronic Circuits and Devices
- Micro-manufacturing and Micro- and Nano-technologie
- Robotics
- IoT, Computer & Communication Engineering
- Optics, Photonics and wave engineering
- Machine learning, Information Science and Systems
- Power and Energy

Research in IEM :

- **39** Full Professors / Associate Professors / Tenure-Track Assistant Professors
- **1** SNSF-funded Professor
- **12** Adjunct Professors
- **11** Senior Scientists
- **1** Member of the US National Academy of Engineering
- **1** Member of the American Academy of Arts & Sciences
- **1** Member of the Academia Europaea
- **2** Members of Swiss Academy of Engineering Sciences
- **25** ERC grants : 12 Advanced, 6 Consolidator and 7 Starting grants since 2008

EPFL mt microtechnique microengineering section

One Institute on 3 campuses

EPFL iem
institute of electrical and micro engineering

Geneva - Campus Biotech
- Bio- and neuroengineering (Wyss center)
- Human Brain Project
- Center for neuroprosthetics

- 420 staff
- 9 chairs
- 3880 m²

Neuchâtel - Microcity
- Microengineering and nanotechnologies

- 230 staff
- 11 chairs
- 8035 m²

Course attendance and online offer

- Take profit as much as possible from **presential courses** and interact with teachers and assistants
- Follow **live recordings** only if you have major impediments
- Take profit of the **School's infrastructure** to be on campus
- Make use of archived recordings to **revise, catch-up and strenghten** your knowledge

- All teachers look forward to welcome you in class in order to have the best dynamic and pedagogical teaching style possible

Indicative course evaluations

- Each semester, all courses given at EPFL are evaluated by registered students (week 5 and week 14)
- Your **productive feedback** is essential to help teachers of the section to adapt and improve in a continuouse way their lectures and teaching style.
- Only a high enough participation rate gives representative and useful information
- Your evaluations (and constructive recommendations) have a real impact on teaching

IT security

- Protect your passwords
- Beware of Phishing e-mails
- Protect your hardware and login credentials
- Update your software
- Minimize risks when surfing the web

→ https://go.epfl.ch/ITSecure

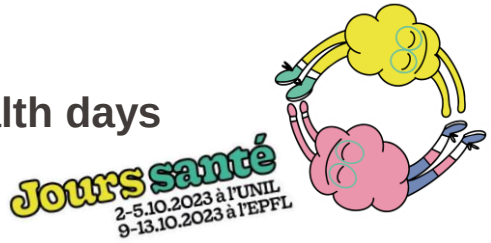
Respect and well-being

EPFL is a community of around 20,000 people

- Who enrich our community every day with their skills, identities, and differences
- By joining EPFL, we commit to upholding values based on **respect and well-being**
- To live up to these values EPFL has created the **Trust and Support Network**
- Easy access through **Trust Point**

Towards a culture of respect and well-being

- **Health days**



Everyone has a role to play!

We are all concerned!

- Get **trained** to know how to **act** and **react**
  Moodle Promoting respect >>>>>>>>

- **Speak up** and **seek support**
  Trust & Support Network (TSN) >>>>>>>>

- Internal entity to file formal complaints
  Respect Compliance Office (RCO)

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microtechnique
microengineering
section

EPFL student services

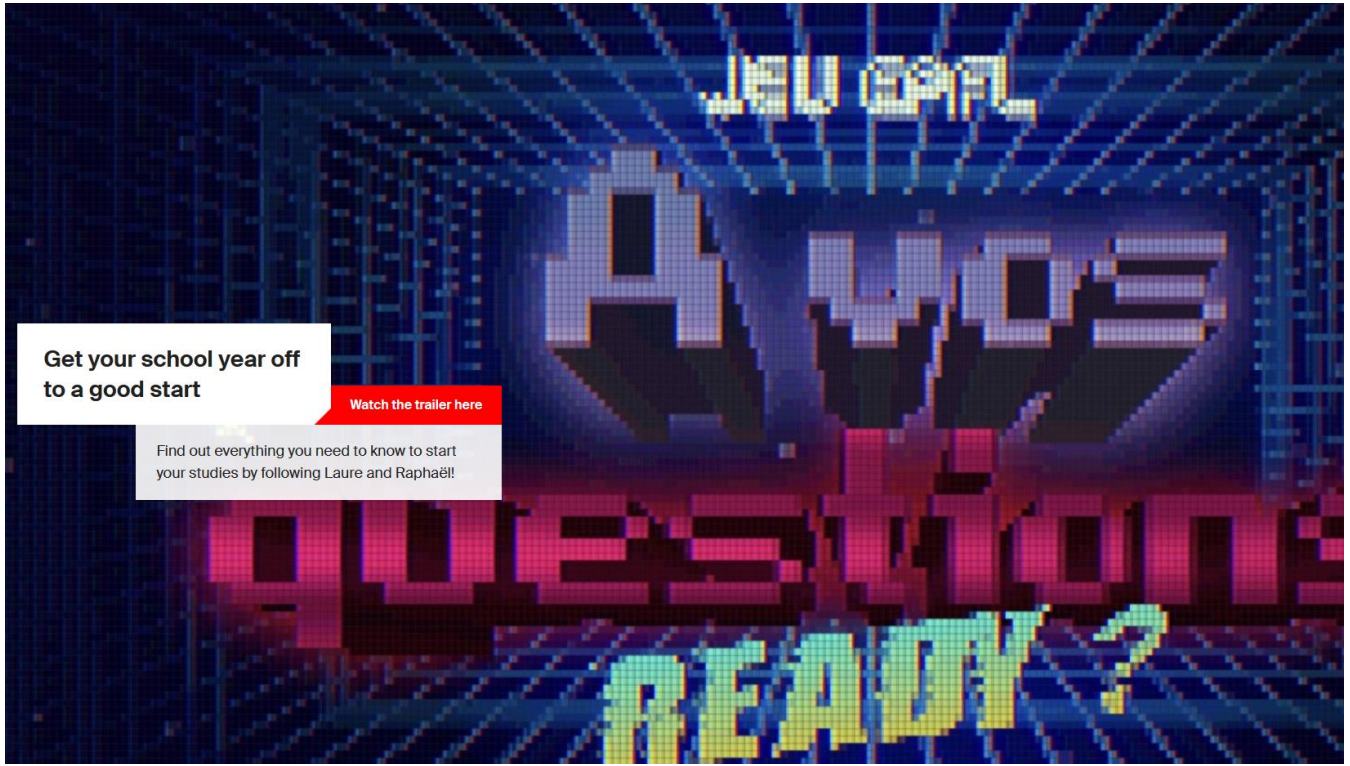
The EPFL “Student Services” desk is the main contact point for all academic queries

For EPFL students or doctoral students, whether recently arrives or recently graduated, whether you have a doubt, a question or a problem. The “Student Services” Hotline is the focal point to process all your requests.

A question ?
Please contact the Student Services Hotline preferably in the following order:

- Look up our information pages on the website EPFL studies.
- Send an e-mail
- **Go to the Student Services desk** during office hours (see below)
- **Call** 021 693 43 45 (you will get voice mail outside office hours or if the office is busy)

Anything else you need to know …



https://www.epfl.ch/education/studies/en/equipped-for-studies/

Before contacting the Section …

Get in touch with your study advisors

- Advanced Manufacturing : Yves Bellouard
- Micro/nanosystems : Giovanni Boero
- Photonics : Olivier Martin
- Robotics Master and orientations : Francesco Mondada

Minors

- Biomedical Technologies Minor : Carlotta Guiducci
- Photonics Minor : Olivier Martin
- Imaging Minor : Daniel Sage

Industry internship

- Industry Internships : Hind Klinke

Administration : Isabelle Schafer

MT Section office

The section office (BM1136) is open every day for **administrative questions** from 8 AM to 2 PM

- Isabelle Schafer (administrative assistant)

For detailed questions regarding **your curriculum or study plan**, please **request an appointement:**

- Sebastian Gautsch (section adjunct)
- Christophe Moser (section director)

EPFL mt microtechnique microengineering section

Q & A

Download the presentation

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microtechnique
microengineering
section

We wish you a good start at EPFL and best of success for your studies !!!

agepoly

Welcome on the EPFL Campus!

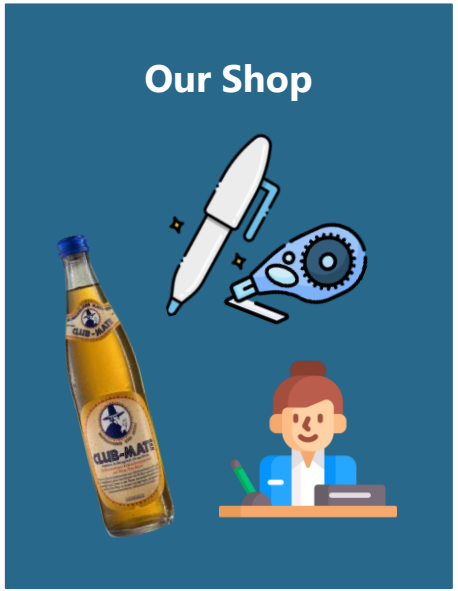
Septembre 15th 2023

The Student's General Association

Association
Générale des
Étudiant·e·s de
l'EPFL

Recap on AGEPoly

What links you to AGEPoly



Recap on AGEPoly

What links you to AGEPoly

Our Shop

Your Camipro

As off now you are an AGEPoly member

Recap on AGEPoly

What links you to AGEPoly

Our Shop

Your Camipro

As off now you are an AGEPoly member

Wonderful people

2 class representatives

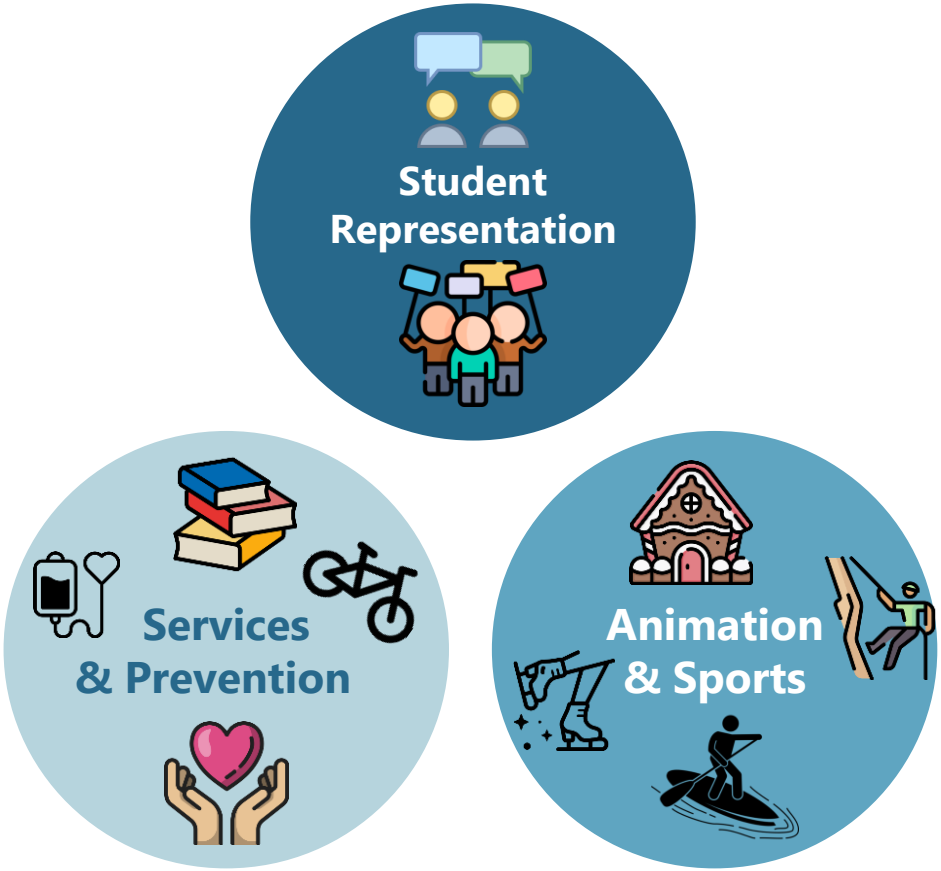
AGEPoly's Structure

agepoly

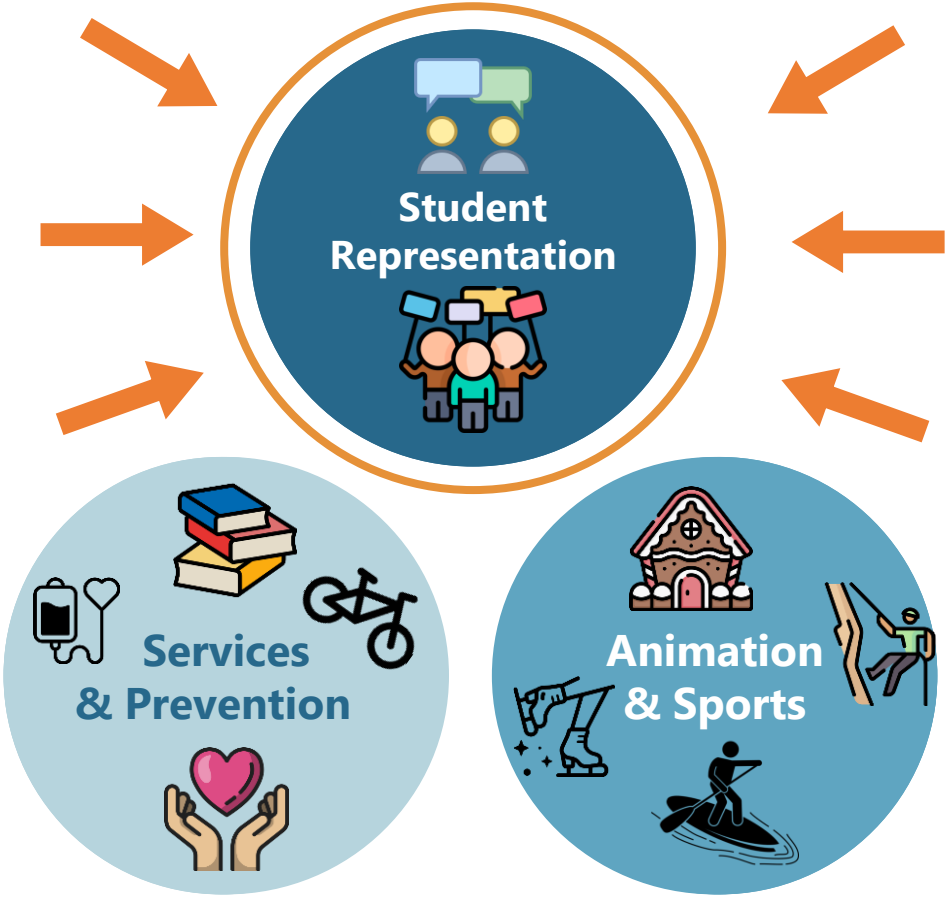
AGEPoly's Structure

AGEPoly's Structure

AGEPoly's Structure



AGEPoly's Structure



What is a class representative ?

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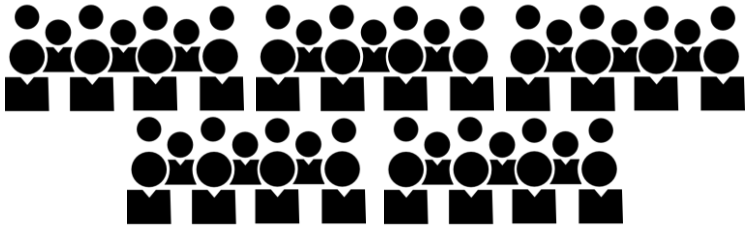

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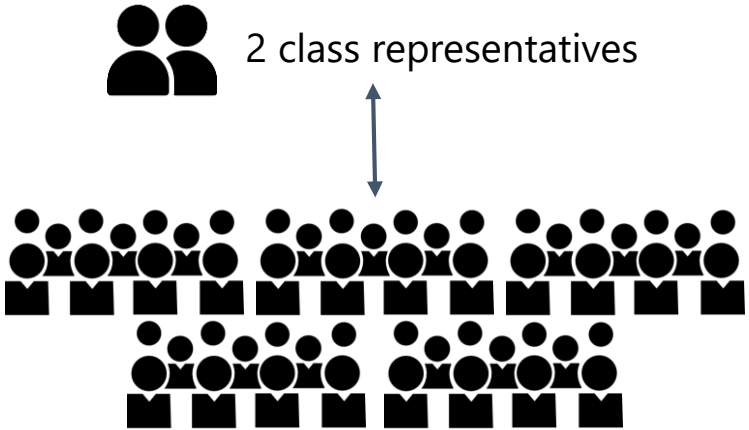

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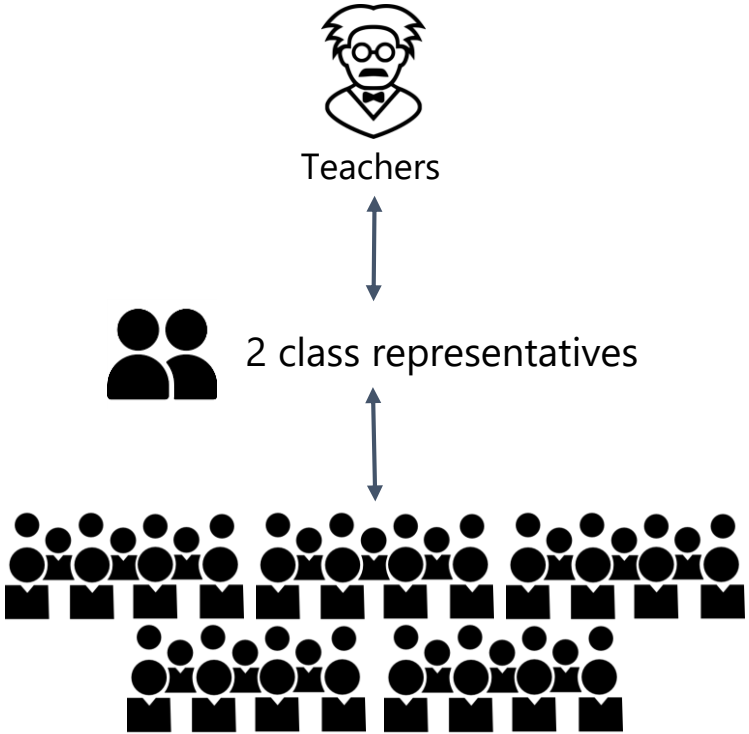

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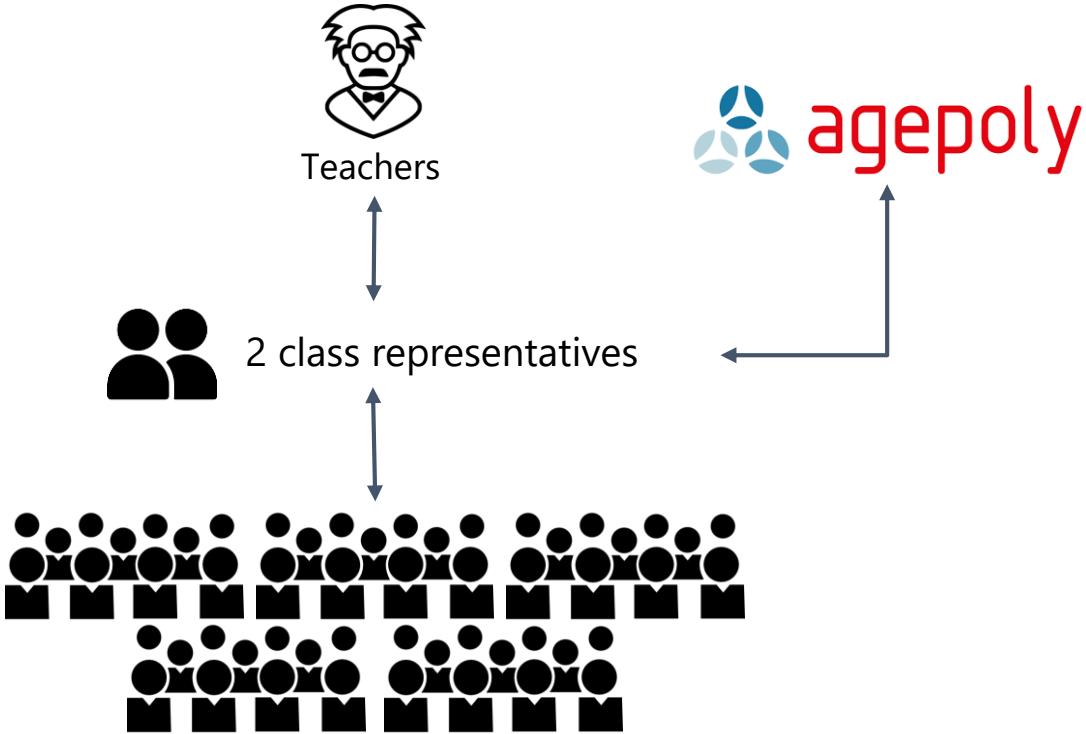

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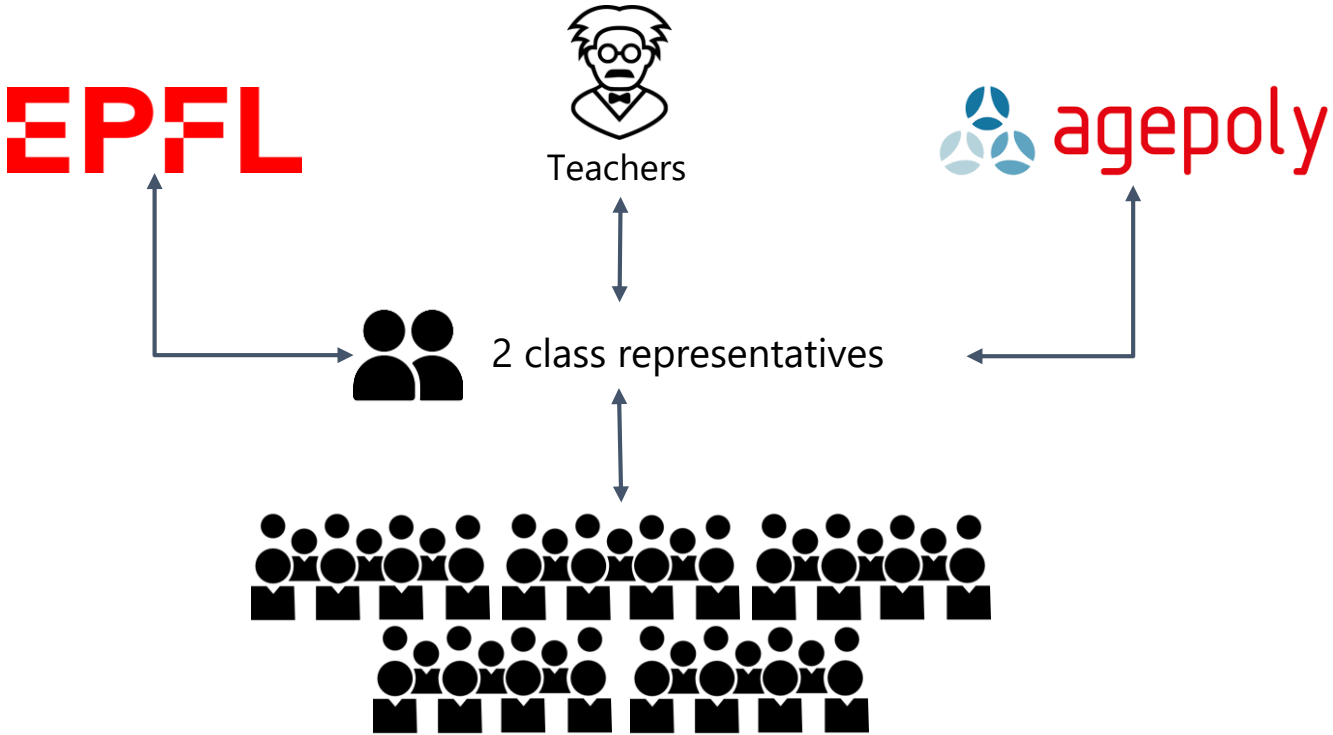

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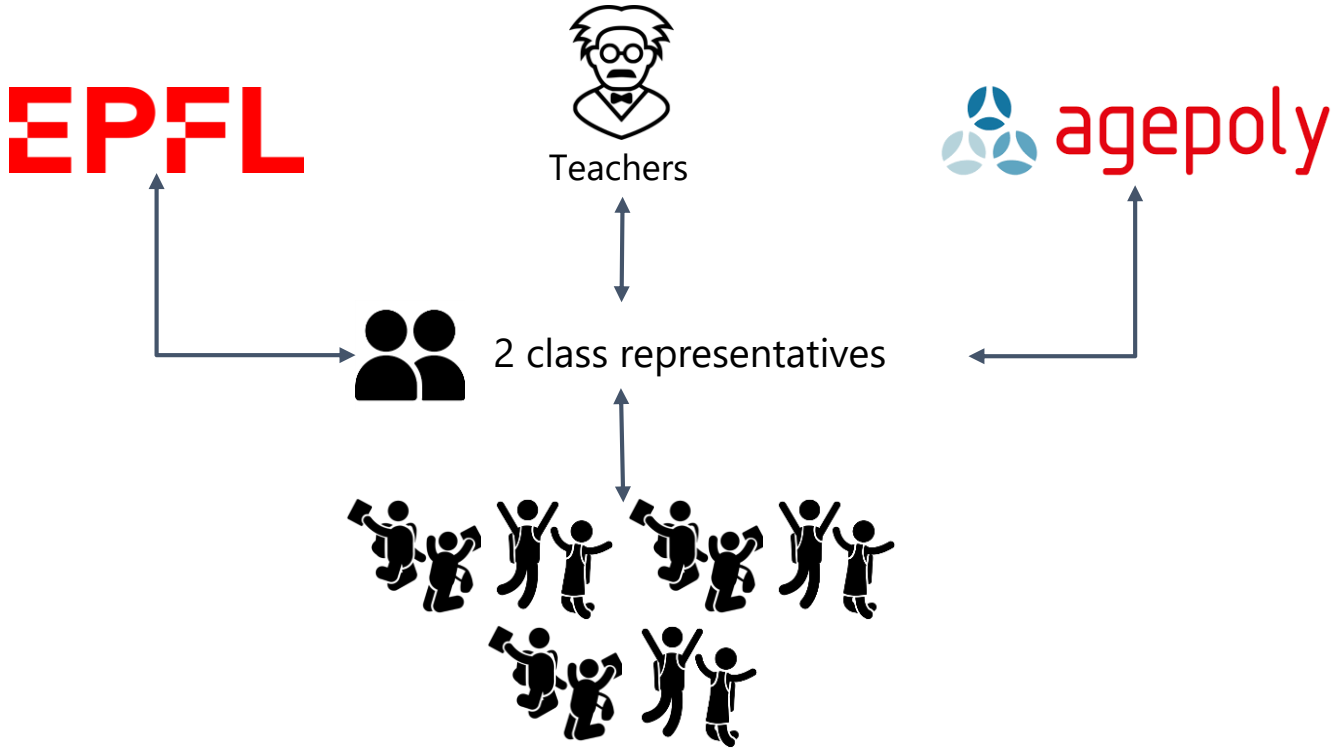

Why do we need class representatives ?

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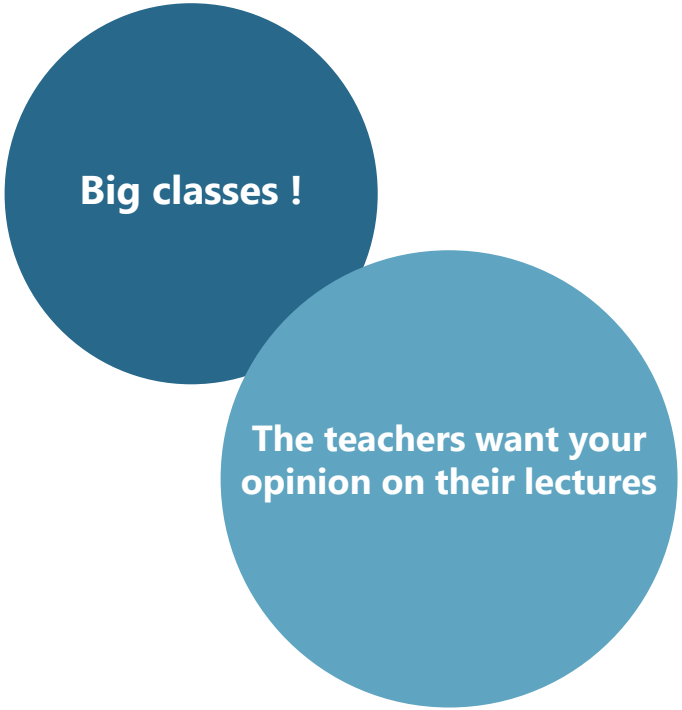

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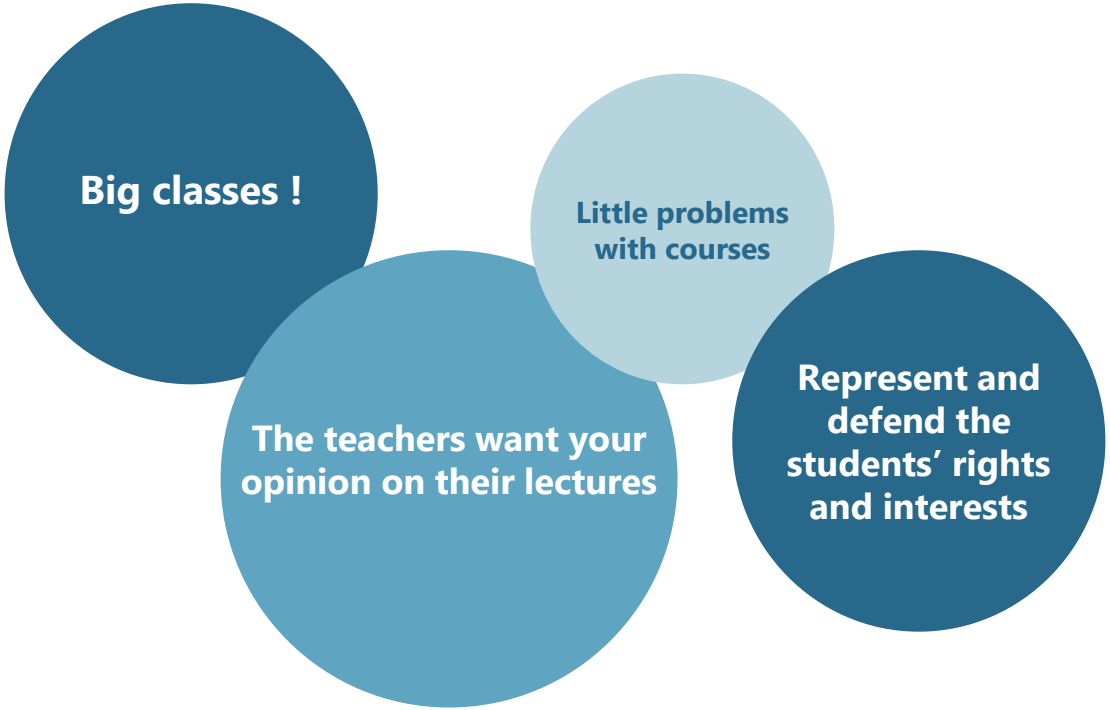
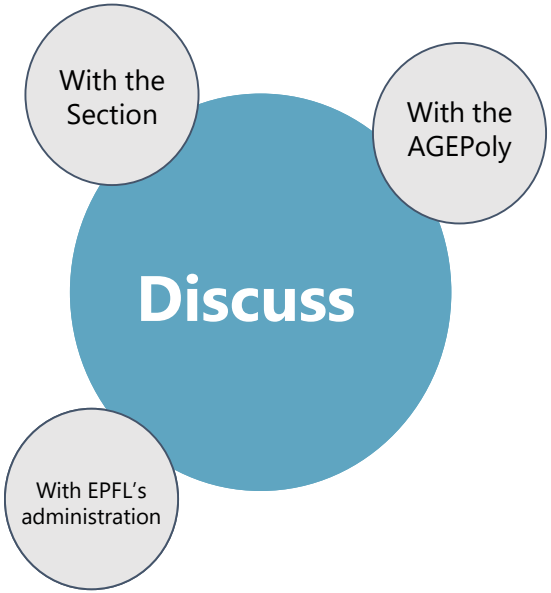


What do class representatives do ?



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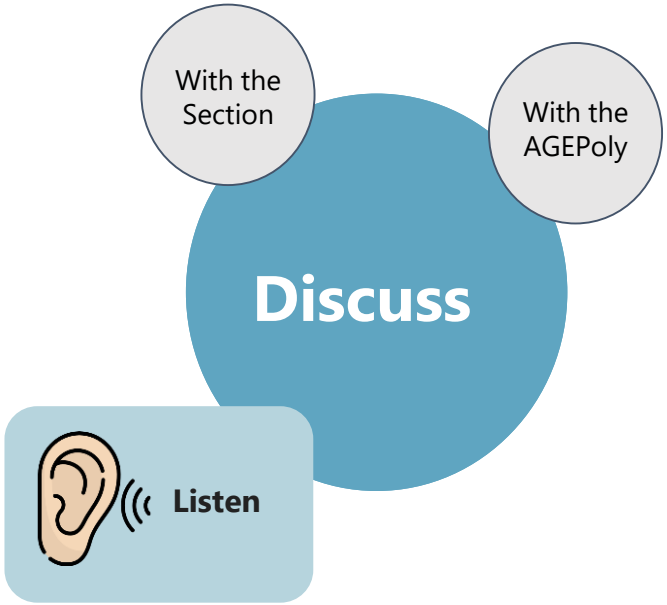


What do class representatives do ?

What do class representatives do ?

What do class representatives do ?

Allow your class' voice to be heard

Relay information

Discuss

Listen

Promoting EPFL's values of respect

More precisely

Representation trai

Running polls
To gather your class' opinion

More precisely

Representation trai

Meetings with EPFL board and your section

To defend the students' interests

Running polls

To gather your class' opinion

Meetings with other students

To figure out solutions and find common problems

Accurately

Representation trai

Meetings with EPFL board and your section

To defend the students' interests

Super cool projects !

Changes in the study plan
Break Week
Study trip

And much more!

Running polls
To gather your class' opinion

Meetings with other students
To figure out solutions and find common problems

Meet wonderful people !

Class representatives from other classes and sections
Teachers with great passion, for teaching and research

Soooo...

A question ?

An issue in a class?

Soooo...

A question ?

An issue in a class?

Class representatives

How to become a student representative ?

How to become a student representative ?

Apply

Sign in now on IS Academia, until **Friday September, 22nd**

IS-ACADEMIA
OUTIL DE GESTION ACADEMIQUE

How to become a student representative ?

Apply

Sign in now on IS Academia, until **Friday September, 22nd**

IS-ACADEMIA
OUTIL DE GESTION ACADEMIQUE

Vote

From **September 23rd to 28th** on IS Academia

IS-ACADEMIA
OUTIL DE GESTION ACADEMIQUE

How to become a student representative ?

Apply

Sign in now using the Google Forms, until **Friday September, 22nd**

Vote

From **September 23rd to 28th** on IS Academia

IS-ACADEMIA
OUTIL DE GESTION ACADEMIQUE

Results

September 29th

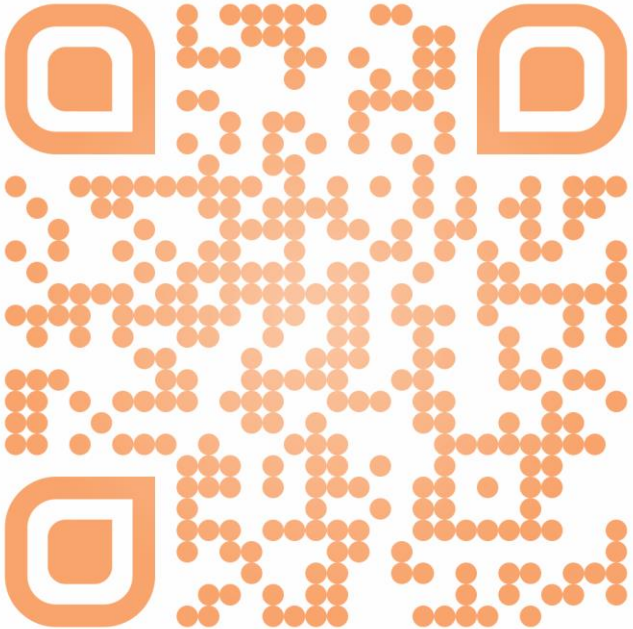
You can apply now on IS Academia!

To know more about representation

Join our **Telegram Representation Channel** to:

- Stay informed about what happens in terms of representation at EPFL
- Give your opinion on important issues

https://go.epfl.ch/telegram_ageprepres



Ask us all of your questions

contact@agepoly.ch

representation@agepoly.ch

Salim Najib

Alexia Giroud Nyer

agepoly

AGEPoly wishes you an excellent academic year !

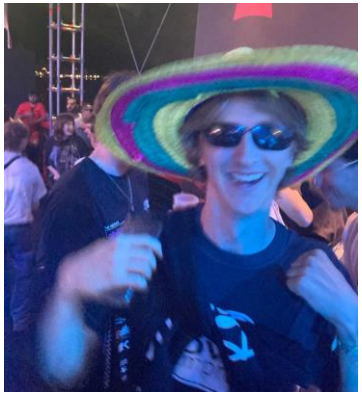
AGEPOLY

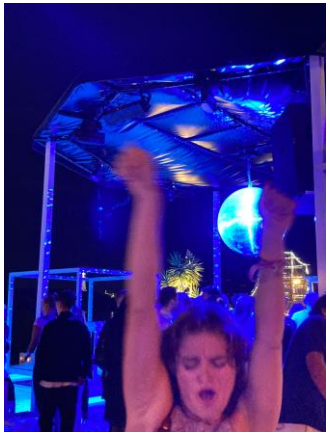

24
23
Coaching MT

VOS SUPERCOACHS

Alexandre Schlageter

alexandre.schlageter@coaching-epfl.ch





Charlotte Sébastien

charlotte.sebastien@coaching-epfl.ch

LE COACHING C’EST…

- …que de l’amooour !!

- …des rencontres et un max de fun
- …des conseils, de l’écoute et de la bienveillance :)
- …tout faire pour que vous passiez une année de folie!

ANNÉE 2022-2023

Apéros, weekend ski, distribution de petit-dej…

CODE QR - REGARDEZ VOS MAILS EPFL!!

Groupe Telegram

MT BA1 23


yuh
Your app. Your money.
#FORUMEPFL
COACHING
2023-2024
rivella
agepoly
Menu
Pizza 10.5.-
Nouille 11.-
Snack 3.5.-
Welcome Party
15
SEPT.
•jeux
•concert
•buvette
•nourriture $$
Les artistes :
Skuuted
Kobe and the beef
Centre-Sportif
UNIL-EPFL
16:00 - 22:00
!ENTRÉE GRATUITE!
Une association reconnue par l'EPFL
An association recognized by the EPFL

DES QUESTIONS?