

Welcome Master students !



Prof. Christophe Moser
Section director



Dr. Sebastian Gautsch
Section adjunct



Prof. Francesco Mondada
Robotics master
program director



Isabelle Schafer
Administration

General info:

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

<http://smt.epfl.ch/>

Agenda

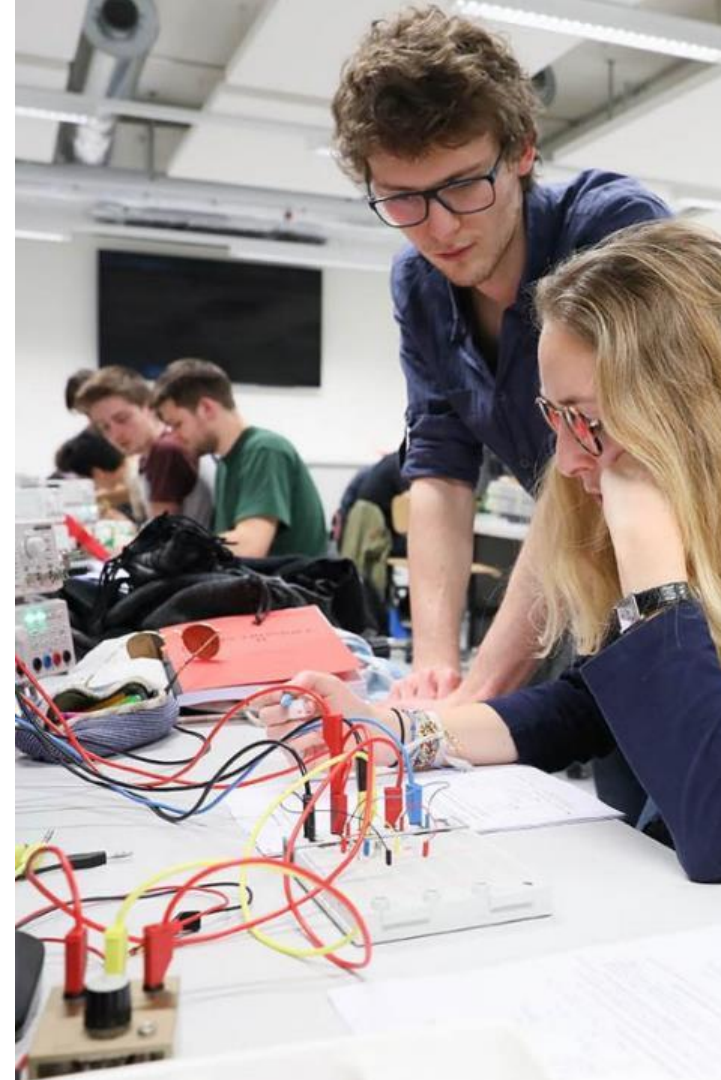
15h00 – 15h30 : **General info for new students**

15h30 – 15h40 : **Microengineering Master**

15h40 – 15h50 : **Robotics Master**

15h50 – 16h00 : **Q&A**

16h00 – 17h00 : **Refreshments**
(together with 1st year students)
Outside in front of BM Building



Microengineering/Robotics Passerelle program

validé par la vice-présidence pour les affaires académiques le 25 mai 2022

Code	Matières	Enseignants sous réserve de modification	Sections	Semestres						Crédits	Période des épreuves	Type exam.
				AUT			PRI					
				c	e	p	c	e	p			
	Bloc 1 "Branches de base"									30		
MATH-203(a)	Analyse III	Michelat	MA	2	2					4	H	écrit
MATH-207(a)	Analysis IV (for SV, MT)	Licht	MA				2	2		4	E	écrit
ME-326	Automatique et commande numérique	Karimi + Salzmann	GM	4	1	1				6	H	écrit
MICRO-321	Ingénierie optique	Achouri K./Martin O.	MT	2	1	3				6	H	écrit
PHYS-201(c)	Physique générale : électromagnétisme	Boero	MT	4	2					6	H	écrit
MICRO-310(a)	Signaux et systèmes I (pour MT)	Unser	MT	2	2					4	H	écrit
	Bloc 2 "Branches d'approfondissement"									27		
MICRO-313/314	Actionneurs et systèmes électromagnétiques I, II	Köchli/Perriard + Hodder/Köchli/Perriard	MT	2			2	1	2	7	E	écrit
MICRO-330	Capteurs	Boero/Shea	MT				5			5	E	écrit
MICRO-312	Physique des composants semiconducteurs	Besse	MT	4						4	H	écrit
MICRO-311(a)	Signaux et systèmes II (pour MT)	Unser	EL				2	2		4	E	écrit
MICRO-315	Systèmes embarqués et robotique	Mondada	MT				2		4	7	sem P	sans retrait
	Totaux :			20	8	4	13	5	6			
	Totaux par semaine :				32			24		57		

Pour **réussir la passerelle HES**, un étudiant doit :

- avoir acquis **au moins 30 crédits à la fin du deuxième semestre** de la passerelle HES et
- avoir acquis **tous les crédits requis à la fin du quatrième semestre** de la passerelle HES.

https://www.epfl.ch/education/studies/reglement-et-procedure/conditions_reussite/reussite-passerelle/

Microengineering/Robotics Passerelle program

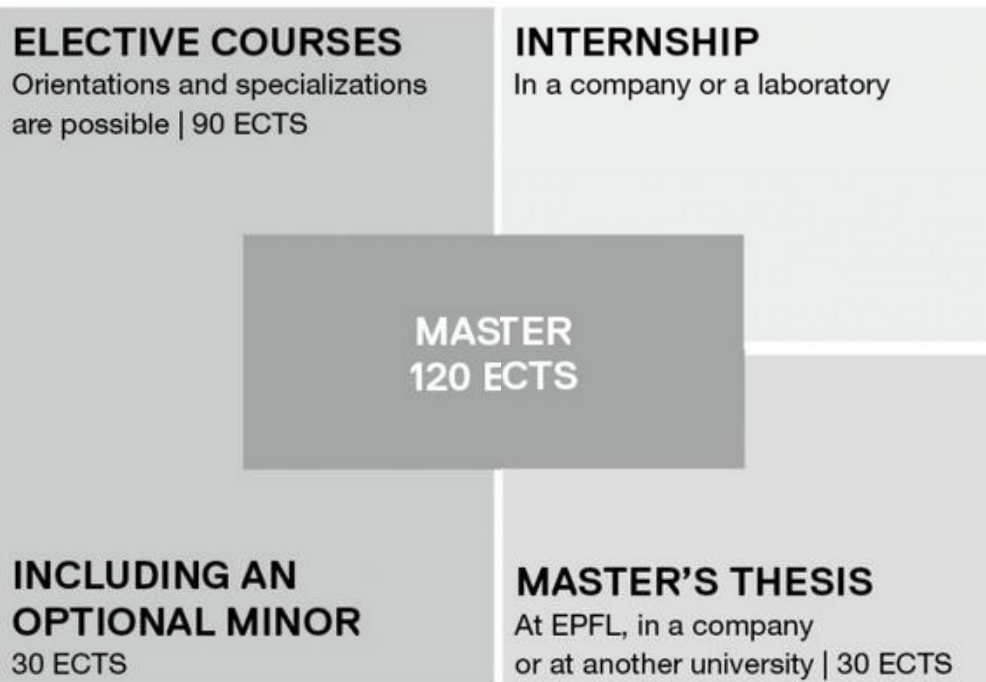
Puis-je commencer le cycle Master sans avoir terminé la passerelle HES ?

Oui, mais seulement si :

- vous avez obtenu au moins 30 crédits ECTS de passerelle HES et
- vous n'êtes pas en échec définitif à la passerelle HES.

La période durant laquelle vous avez commencé votre cycle Master mais pas encore terminé la passerelle HES compte à la fois dans la durée maximale de la passerelle HES et dans celle du cycle Master.

Master program structure



Reading a study plan

2022-2023

MICROTECHNIQUE

Cycle Master

validé par la vice-présidence pour les affaires académiques le 25 mai 2022

Code	Matières	Enseignants sous réserve de modification	Sections	Semestres						Crédits	Nbre places	Période des épreuves *	Type examen *
				MA1 / MA3			MA2						
				c	e	p	c	e	p				
	Bloc 1									26			
MICRO-406	Products design & systems engineering	Bellouard/Charbon	MT	5		5				10		sem A	sans retrait
MICRO-498	Projet microtechnique I	Divers enseignants	Divers	←----- 10 -----→						10		sem A ou P	sans retrait
HUM-nnn	SHS : introduction au projet	Divers enseignants	CDH	2		1				3		sem A	
HUM-nnn	SHS : projet	Divers enseignants	CDH					1	2	3		sem P	sans retrait
	Bloc 2									15			
MICRO-534	Advanced MEMS & microsystems	Briand	MT				3			3		E	oral
MICRO-451	Applied and industrial robotics	Bouri	MT				2			2		E	écrit
MICRO-455	Applied machine learning	Billard	MT	4						4		H	écrit
EE-311	Apprentissage et intelligence artificielle	Liebling	EL				2		2	4		E	écrit
MICRO-421	Imaging optics	Psaltis	MT	2	1					3		sem A	sans retrait
ME-413	Introduction to additive manufacturing	Boillat + Boillat/Brugger/Moser	GM/MT	2		1				3		H	écrit
MICRO-426	Laser fundamentals and applications for engineers	Moser	MT				2	1		3		E	oral
MICRO-448	Manufacturing systems and supply chain dynamics	Filliger/Gallay	MT				2	1		3		E	oral
MICRO-431	Materials and technology of microfabrication	Gijs/Lehnert	MT	2	1					3		H	oral
MICRO-457	Materials processing with intelligent systems	Hoffmann/Wasmer	MT	2	1					3		H	oral
MICRO-428	Metrology	Bruschini/Charbon/Fantner	MT/SV				3			3		E	oral
MICRO-530	Nanotechnology	Boero/Brugger	MT				3			3		E	oral
MICRO-523	Optical detectors	Besse	MT	3						3		H	oral
MICRO-470	Scaling laws & simulations in micro & nanosystems	Renaud/Shea	MT	3	1					4		H	oral
MICRO-420	Selected topics in advanced optics	Martin O.	MT	3						3		H	oral
EE-594	Smart sensors for IoT	Enz/Ionescu	MT/EL	2	1					3		H	écrit
	Groupe 3 "Options"									49			
	Voir liste d'options ci-après												
	Total des crédits du cycle master									90			

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**.

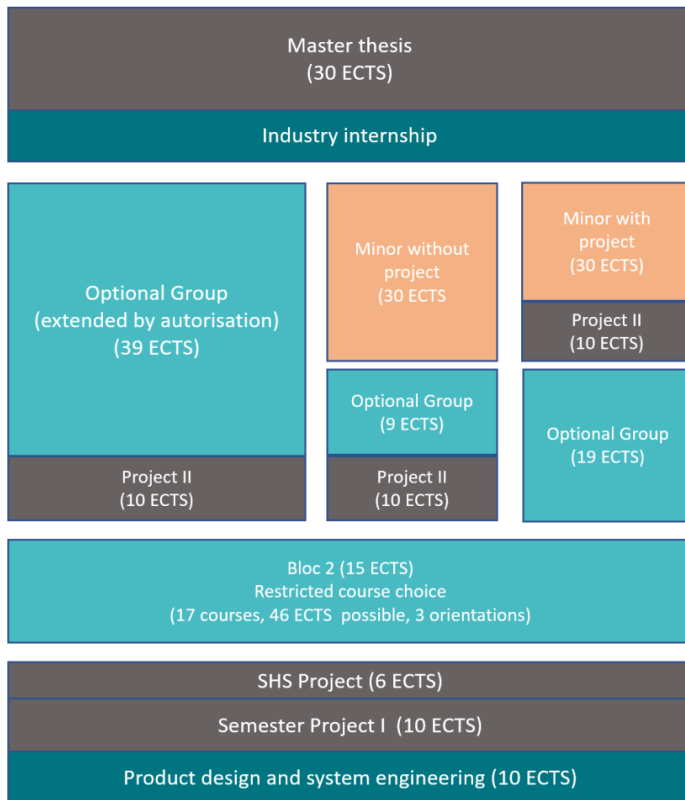
- Group

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.

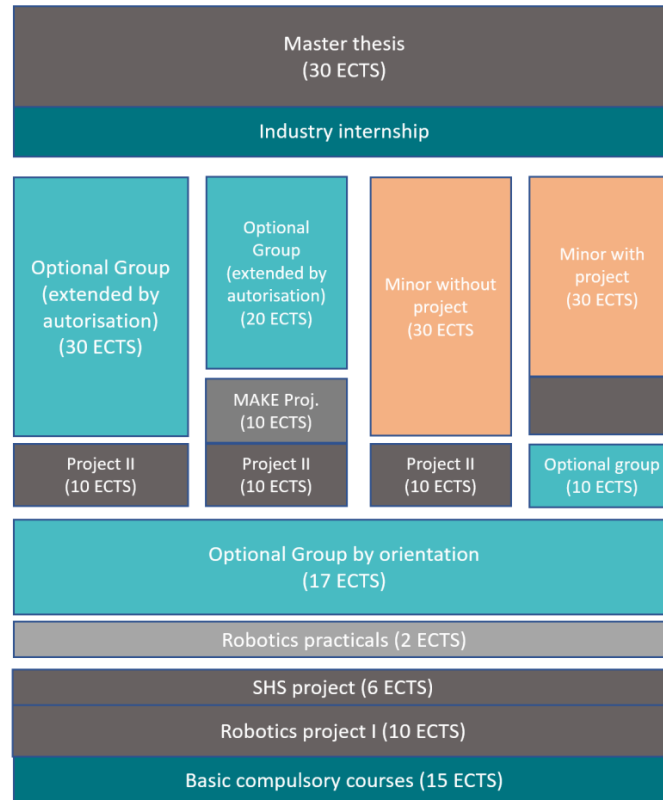


Master Program structure

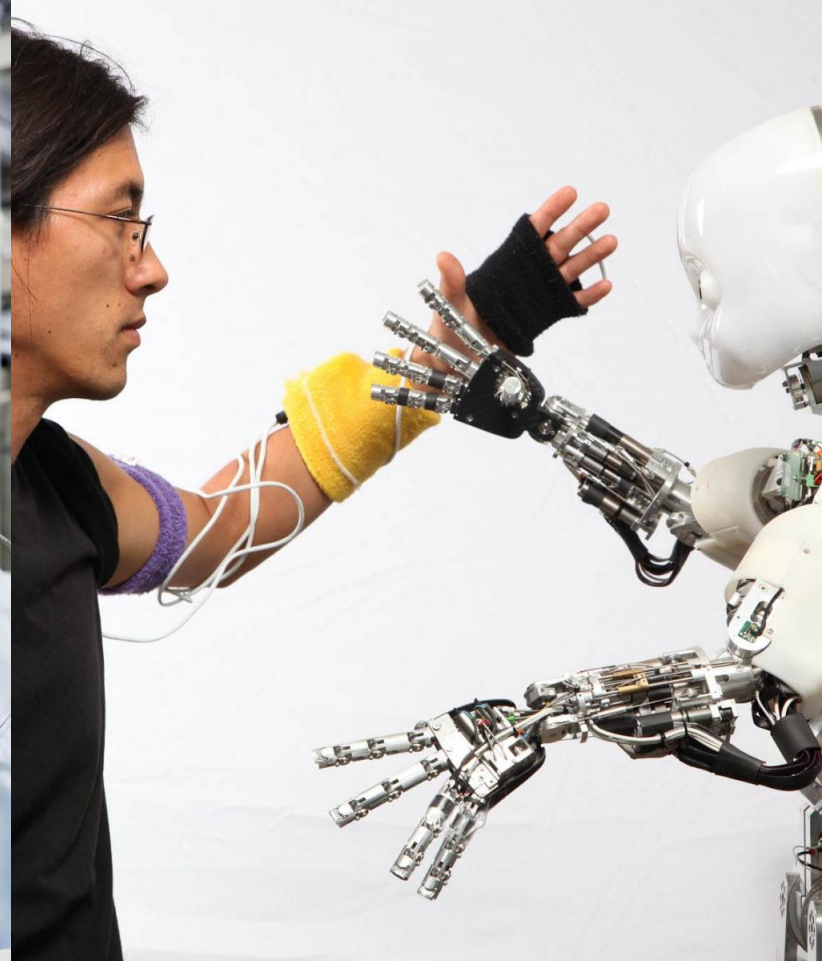
Microengineering



Robotics

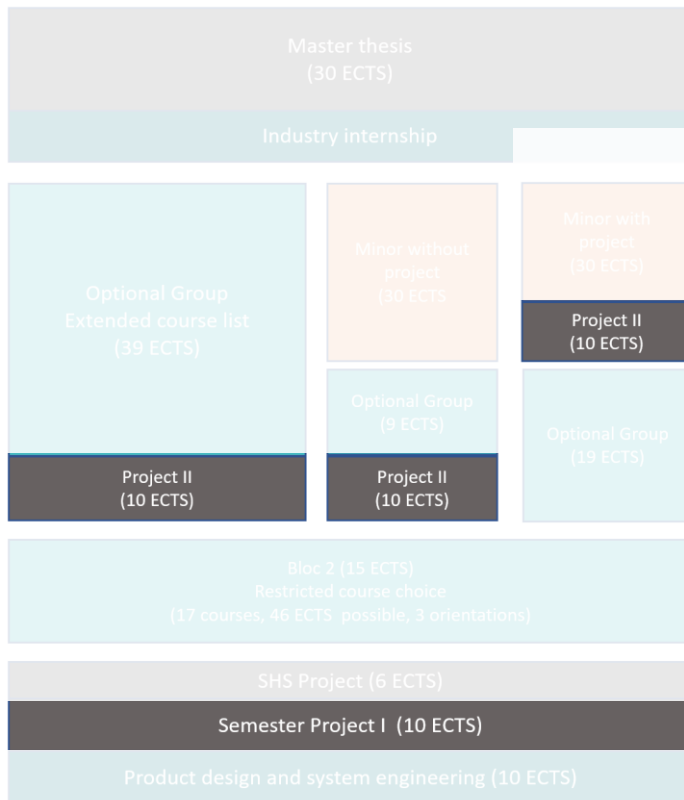


2 Semester projects

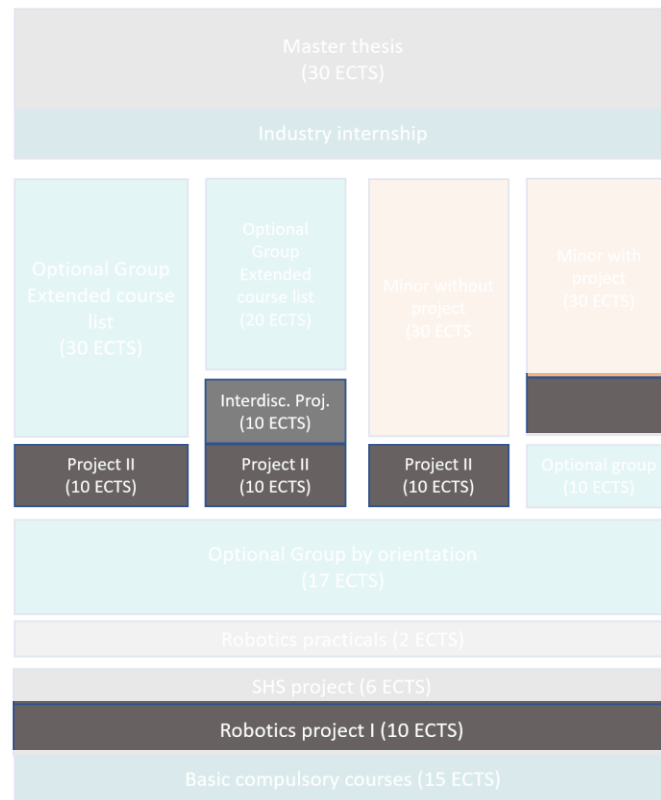


Semester projects ...

Microengineering



Robotics



Semester projects guidelines

EPFL

SCHOOL OF **ENGINEERING** >
ELECTRICAL AND MICRO
ENGINEERING

THE INSTITUTE

EDUCATION EL

EDUCATION MT

Semester project guidelines

- Find a project
- Registration
- Project description
- Dates
- Evaluation method

<https://sti.epfl.ch/research/institutes/iem/semester-project-guidelines/>



Finding a project

Lab websites with semester and master projects proposals ↗

LABORATOIRES

Institut	LAB	Laboratoire
ENAC-IIE	DISAL	Distributed Intelligent Systems and Algorithms Laboratory
STI-IBI	Biorob	Biorobotics Laboratory
STI-IBI	LBEN	Laboratory of Nanoscale Biology
STI-IBI	LMAM	Laboratory of Movement Analysis and Measurement
STI-IBI	LNE	Medtronic Chair in Neuroengineering
STI-IBI	MIPLAB	Medical Image Processing Laboratory
STI-IBI	TNE	Translational neuroengineering lab
STI-IBI/IMT	LBNI	Laboratory for Bio- and Nano-instrumentation
STI-IEL	EMC	Electromagnetic Compatibility
STI-IEL	INL	Integrated Neurotechnologies Laboratory
STI-IEL	LIONS	Laboratory for Information and Inference Systems
STI-IEL	TCL	Telecommunications Circuits Laboratory
STI-IEM	ICLAB	Bio/CMOS Interfaces group

RESPONSABLES

Prénom	Nom	Concerné(s)
Alcherio	Martinoli	MT&RO
Auke	Ijspeert	MT&RO
Aleksandra	Radenovic	MT
Kamiar	Aminian	MT&RO
Diego	Ghezzi	MT&RO
Dimitri	Van De Ville	MT&RO
Silvestro	Micera	MT&RO
Georg	Fantner	MT&RO
Farhad	Rachidi	MT&RO
Mahsa	Shoaran	MT&RO
Volkan	Cevher	MT&RO
Andreas	Burg	MT
Sandro	Carrara	MT&RO

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

<https://sti.epfl.ch/research/institutes/iem/project-proposals-eng/>

Project 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 deadline: **2 weeks after semester start**



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.

Project evaluation

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](#)

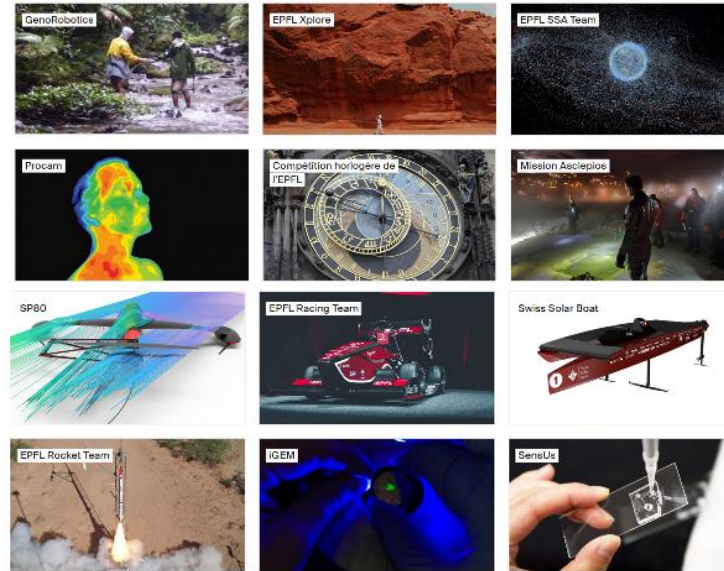
A written report is mandatory at the end of the project

- [Example of a typical semester project report](#)

The written report will be followed by an oral defense, organized by the Professor. 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 \(template\)](#)

MAKE projects



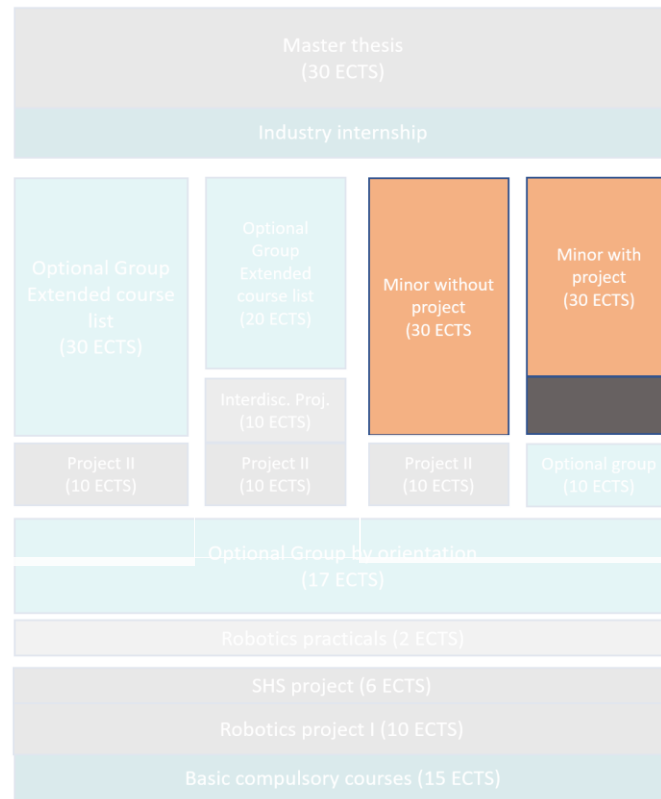
A dedicated procedure for MAKE projects as semester projects is being discussed. For now, please follow the same instructions as for regular semesters.

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

Microengineering



Robotics



Minors

A minor is a group of compulsory and optional courses from one or more Master's programs.

EPFL offers a wide choice of **disciplinary** and **interdisciplinary** minors.

Interdisciplinary minors

Interdisciplinary minors often group together courses from several Master's programs. Some consist of a multidisciplinary topic (I.E. photonics minor) , others offer complementary education to the classical engineering curriculum (Management, Technology and Entrepreneurship)

Rules and procedures:

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

Recommended and possible Minors

				MT	
				MT	MT-Ro
				120	120
Master ECTS (PdM inclus/Master project included)					
Mineurs / Minors		Type	Section Contact		
	Biocomputing	Interdiscipl IN	Salathé M.	c	c
	Biotechnology	Interdiscipl CGC	Pick H.	c	c
	Data and internet of things	Interdiscipl EL	Atienza D.	r	c
	Energy	Interdiscipl GM	Maréchal F.	r	r
	Systems Engineering	Interdiscipl MTE	Weber Th.	c	c
	Engineering for sustainability	Interdiscipl SIE	Gilliéron P.Y. , Leterrier	r	r
	Technology management and entrepreneurship	Interdiscipl MTE	de Rassenfosse G.	r	c
	Photonics	Interdiscipl MT	Martin O.	r	r
N!	Physics of living systems	Interdiscipl SV	Persat A.	r	r
N!	Quantum science and engineering	Discipl. SIQ	Macris N. et Klinke H.	r	r
	Biomedical technologies	Interdiscipl MT	Renaud Ph.	r	r
	Space technologies	Interdiscipl EL	Kneib J.-P.	r	r
	Data science	Discipl. SC	Hazboun E.	c	c
	Computer science	Discipl. IN	Hazboun E.	c	c
	Financial engineering	Discipl. IF	Fahlenbrach R.	c	c
N!	Neuro-X	Discipl. NX	Hummel F, Micera S.	r	r
	Materials science and engineering	Discipl. MX	Marselli B.	c	c
	Computational science and engineering	Discipl. MA	Pouchon O.	r	c
r	recommended in the study plans				
c	choice of the courses with the advice of the initiating section and the person in charge of the minor				

Registering a Minor

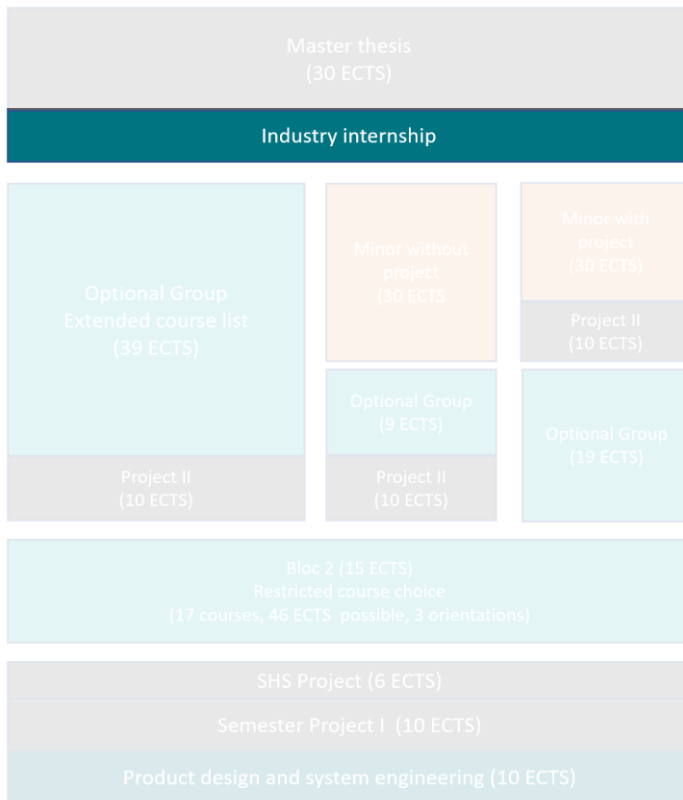
The student **informs the section of his choice of minor** and **selects it in the course-registration screen on IS-Academia, no later than the end of the first semester** of his Master's studies.

The **selection of courses** making up a minor is done **with the approval of the student's program and the person in charge of the minor**. The student registers for these courses on IS-Academia, following the normal procedure.

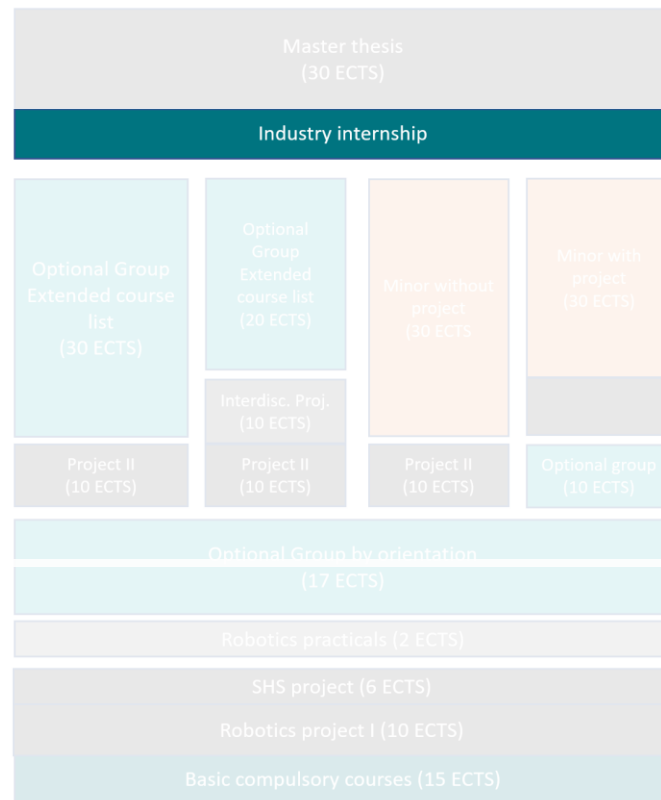
A minor is successfully completed when **30 credits at minimum have been gained** among the approved subjects. Each subject must be successfully completed on its own merits: there is no possible compensation between the subjects. These 30 credits **add to the total for a 90-credit Master's program**.

Industry Internship

Microengineering



Robotics

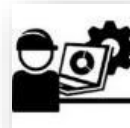


Mandatory Industry immersion: 2 options



Internship

- Minimum duration of 2 month, up to 6 months
- Immersion into industry
- Familiarize with company processes
- Acquire 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 acquired 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



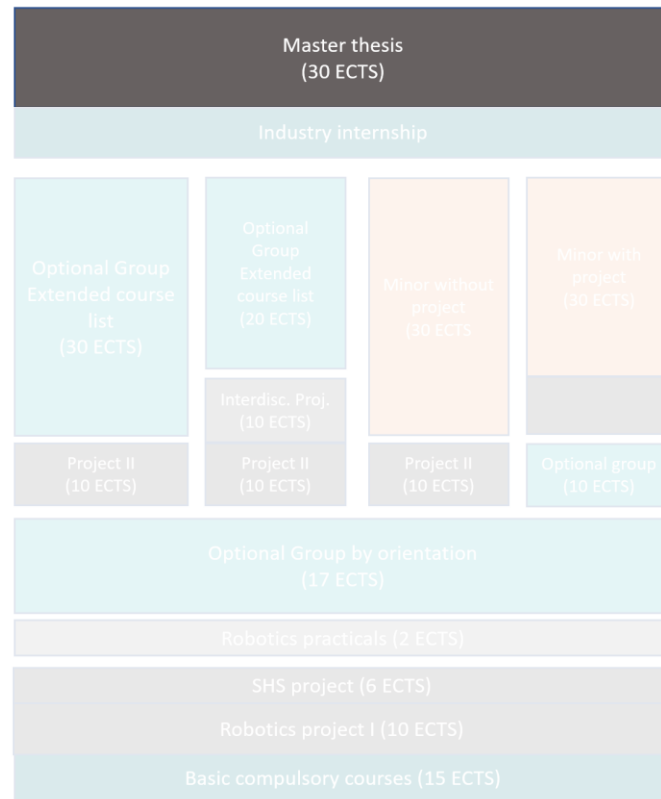
Master thesis (PDM) in academia in foreign Universities: 25 weeks

Master thesis

Microengineering



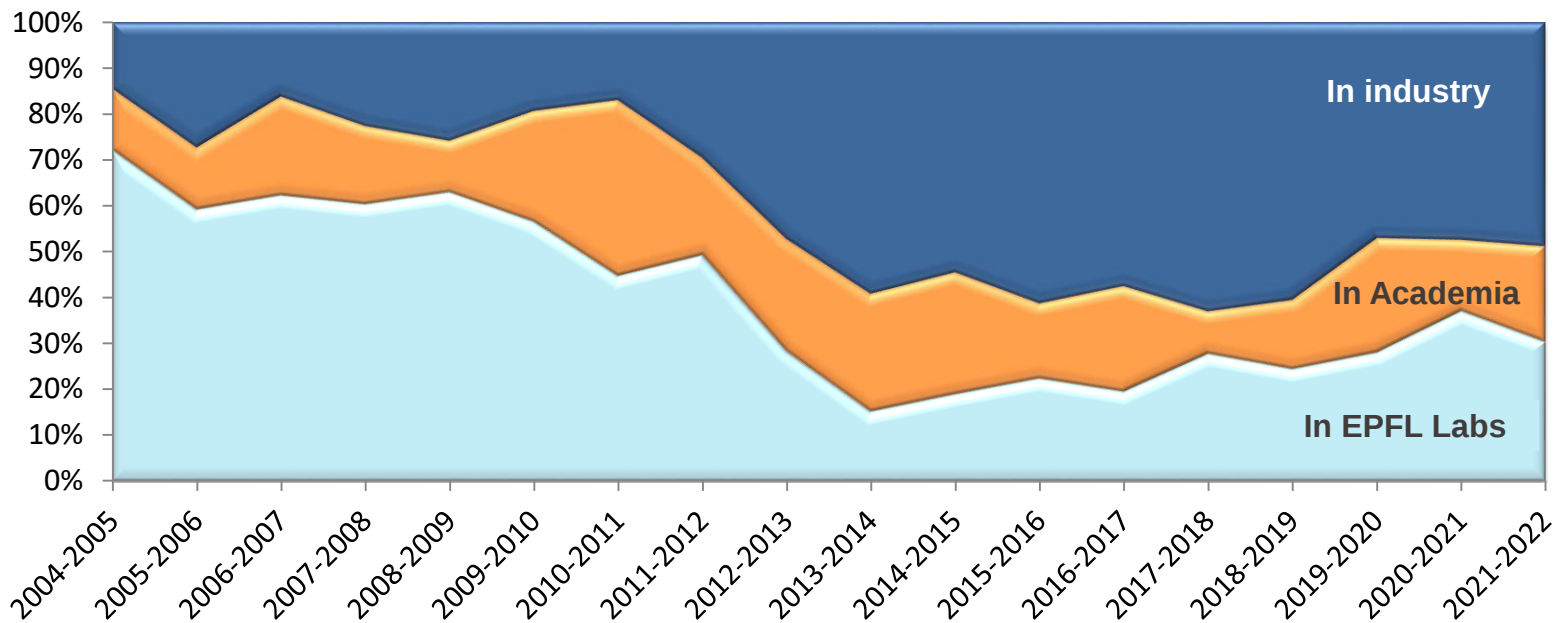
Robotics



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



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 with
ETH Zürich
ETHZ
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 für 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
autonomy
Baracoda
Bionomous Sàrl
Bulgari Horlogerie
Carevature Medical
Carl Zeiss AG
Cartier Opérations - Branch of Richemont International
CleanGreens Solution SA
CSEM - Centre suisse d'électronique et de microtechnique
CSEM - Centre suisse d'électronique et de microtechnique
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

Master projects guidelines

EPFL

SCHOOL OF **ENGINEERING** >
ELECTRICAL AND MICRO
ENGINEERING

THE INSTITUTE

EDUCATION EL

EDUCATION MT

Master projects guidelines

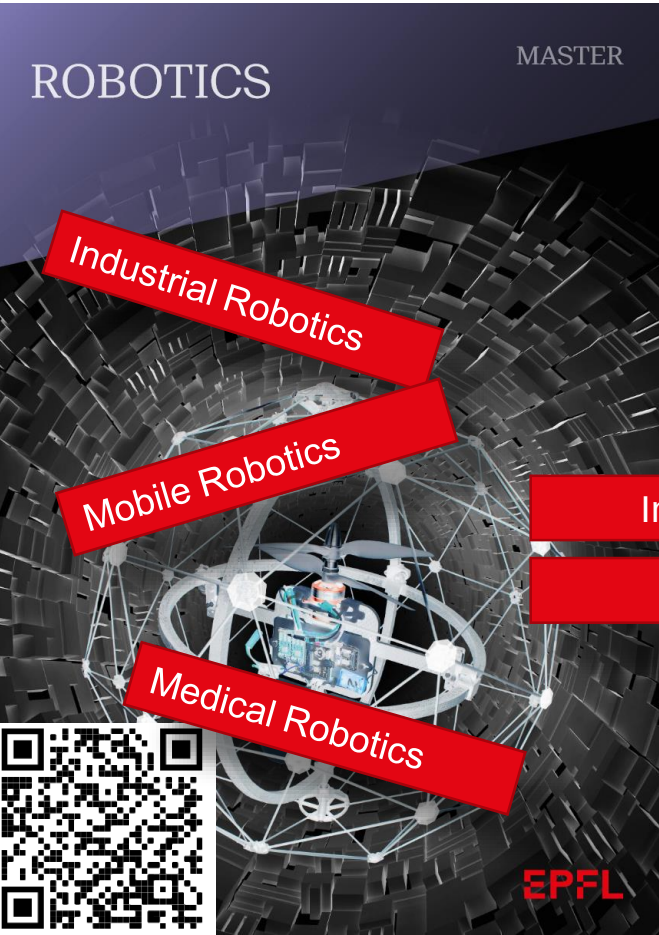
- **Calendar**
- **Choosing a master project in a laboratory**
- **Master project in another university**
- **Project's objectives**
- **Master projects in Industry (PDMe)**
- **Registration**
- **Hand-in procedure**
- **Evaluation method**
- **Student prizes**

<https://sti.epfl.ch/research/institutes/iem/master-project-guidelines/>



Our Master Programs

ROBOTICS MASTER



Industrial Robotics

Mobile Robotics

Medical Robotics

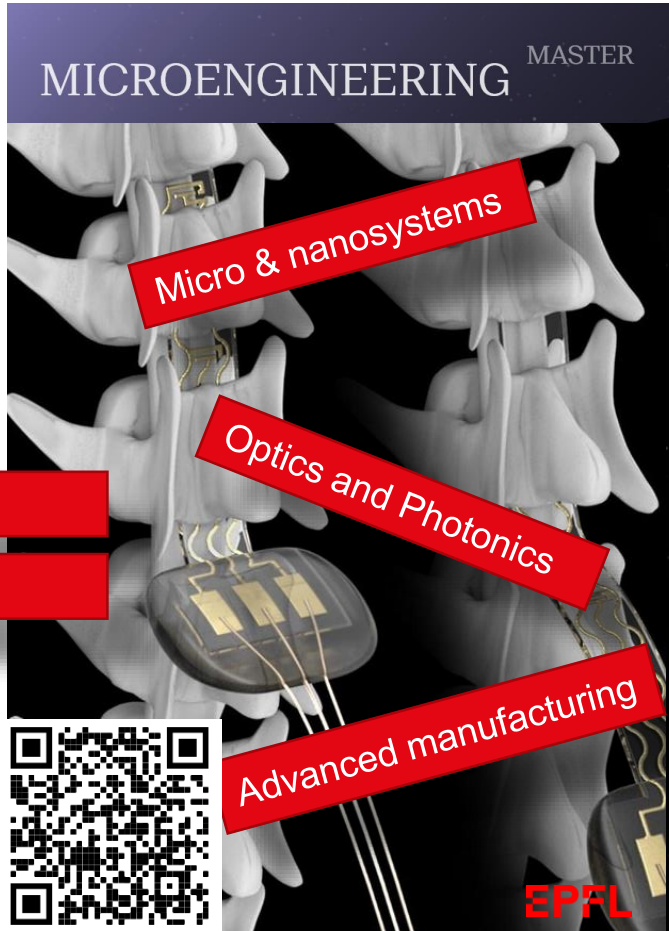
Intelligence artificielle

Machine learning

EPFL



MICROENGINEERING MASTER



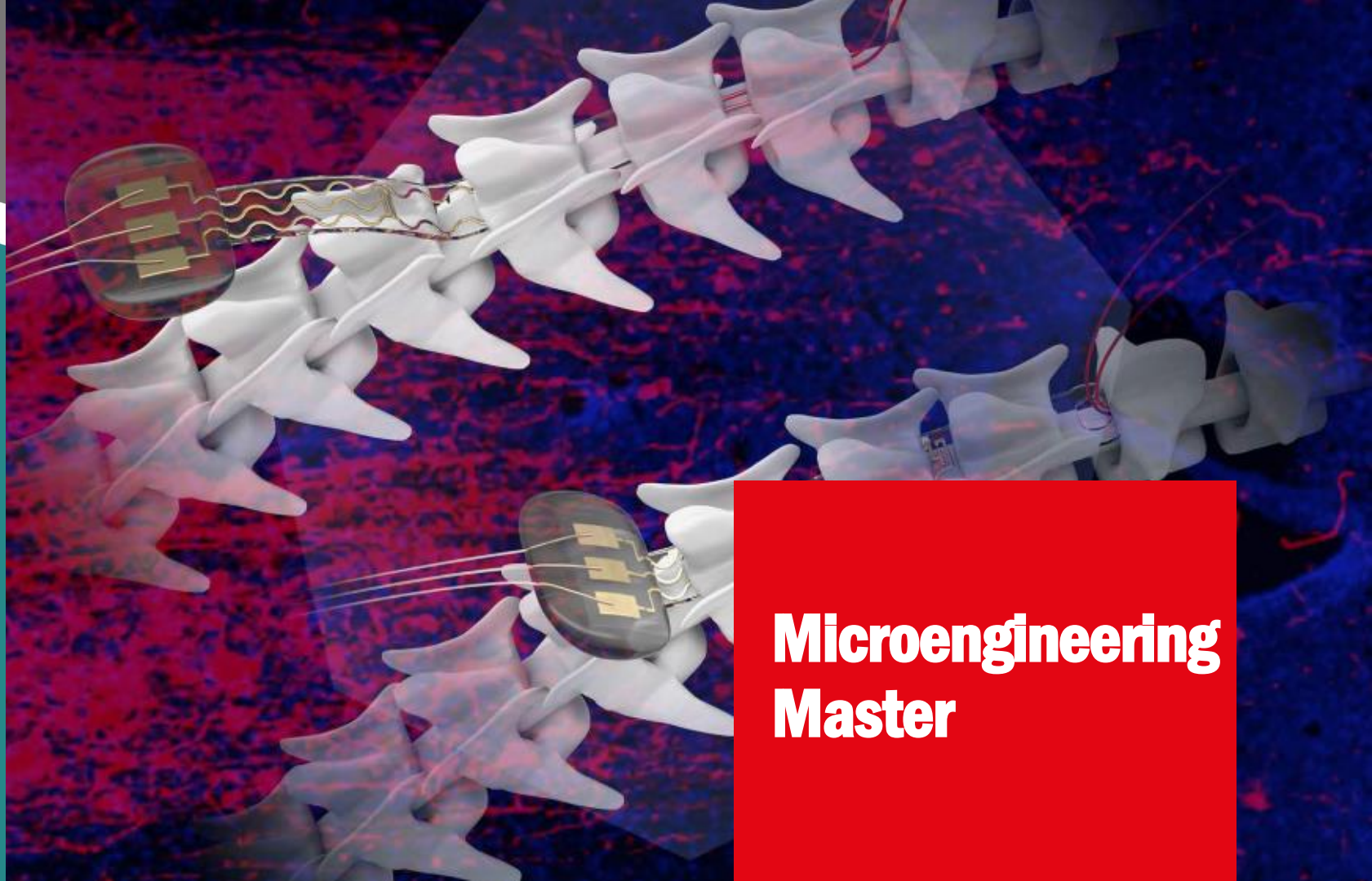
Micro & nanosystems

Optics and Photonics

Advanced manufacturing

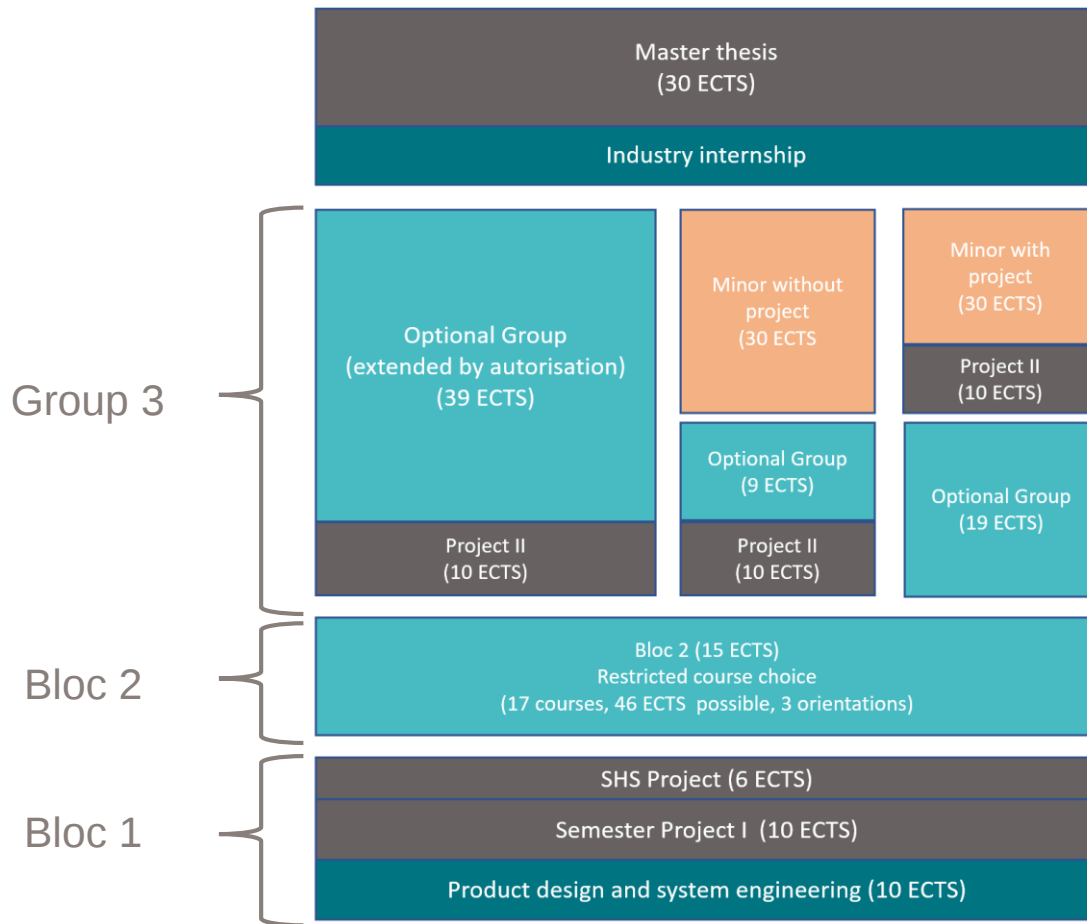
EPFL





Microengineering Master

Master Program structure



Official study plan 2022 - 2023

Rulebook (in French)

[illegible]

Products Design and Systems Engineering

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

With invited speakers from Academics and Industry.



Pablo
Propulsion



Andrea
Propulsion Designer



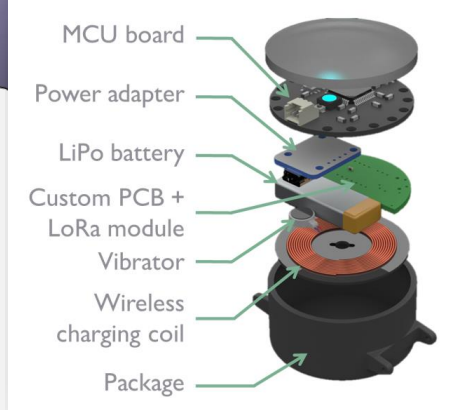
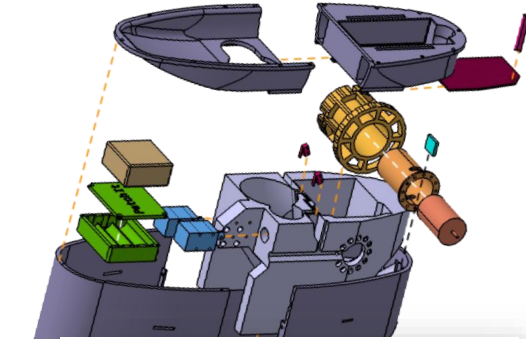
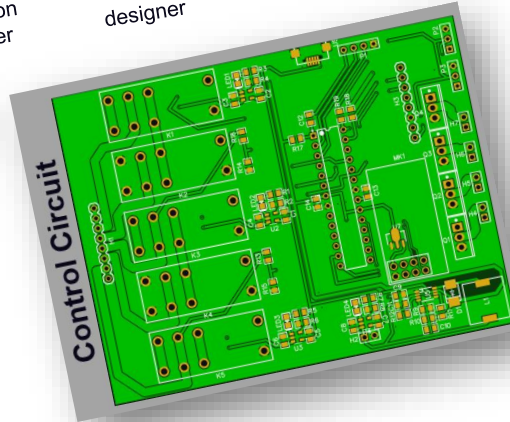
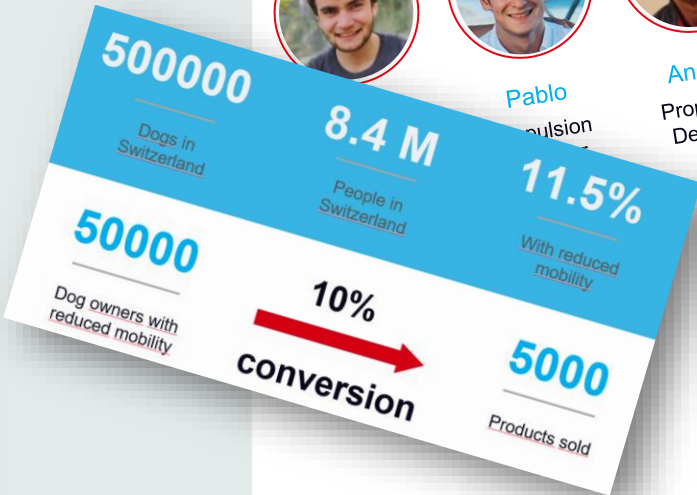
Charlotte
CAD designer



Hugo
Programmer



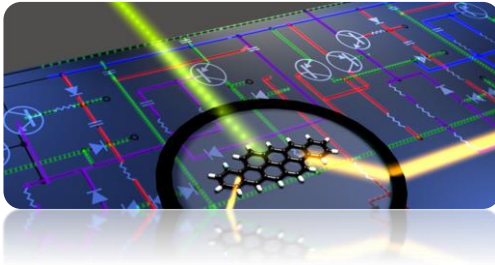
Florian
Business developer



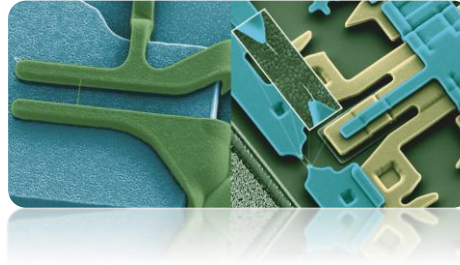
Orientations – Microengineering Master

In Bloc 2 and Group 3, we propose 3 orientations to students.
They are meant as **guidelines** to help students in their course choices.

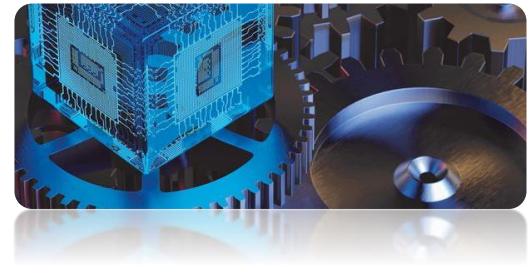
A
Optics and Photonics



B
Micro and Nanosystems



C
Advanced and Production
and Fabrication



Orientations - Master Microengineering

39

Bloc 1

Products Design and System Engineering

Semester project 1, 2

SHS

Bloc 2: Fall

A: Optics and photonics

Imaging optics

Selected topics in advanced optics

Optical detectors

B: Micro & Nanosystems

Scaling laws and simulation methods in micro- and nanosystems

Smart sensors for IOT

Materials and technology of microfabrication

Material processing with intelligent systems

Applied machine learning

C: Advanced Production and Fabrication

Introduction to additive manufacturing

Bloc 2: Spring

Laser fundamentals and applications for engineers

Metrology

Nanotechnology

Advanced MEMS & microsystems

Apprentissage et intelligence artificielle

Applied and industrial robotics

Manufacturing systems and supply chain dynamics

Orientations - Master Microengineering

Group 3 : Fall

A: Optics et Photonics

Biomedical optics

Biomicroscopy I

Nonlinear optics

Nonlinear optics for quantum technologies

Optics design with Zemax OpticStudio

Optics laboratories I

Lasers: theory and modern applications

Quantum and nanocomputing

Transducers for classical and quantum applications

B: Micro et Nanosystems

Micro/nanomechanical devices

Fundamentals of biosensors and electronic biochips

Neural interfaces

Radiofrequency circuits design techniques

MEMS practicals I

C: Advanced Production and Fabrication Techniques

Commande embarquée de moteurs

Commande non-linéaire

Group 3 : Spring

Biomicroscopy II

Fundamentals of Biophotonics

Optics laboratories II

Deep learning for optical imaging

Photonic systems and technology

Metrology practicals

Nanophotonics

Physics of photonic semiconductor devices

Bio-nano-chip design

Fundamentals of analog and mixed signals VLSI design

IC design I

Nanobiotechnology and biophysics

Sensors in medical instrumentation

Fundamentals and processes of PV devices

Large area electronic devices and materials

Organic and printed electronics

MEMS practicals II

Advanced additive manufacturing technologies

Computational motor control

Haptic human robot interfaces

Continuous improvement of manufacturing systems

Analyse de produits et systèmes

Laser microprocessing

Industrial automation

AI / ML

Advanced machine learning
Machine learning programming:
Distributed intelligent systems
Model predictive control
Advanced control systems
Advanced satellite positioning
System identification

Signals

Image processing I
Image processing II
Bio-image informatics
Audio
Neural signal and signal processing
Applied biomedical signal processing

Systems

Embedded systems
Systems engineering
Lab on app development for tablets and smartphones
Management de projet et analyse du risque
Space mission design and operations
Translational neuroengineering

Robotics

Basics of mobile robotics
Legged robots
Aerial robotics
Evolutionary robotics

And more ...

Imaging

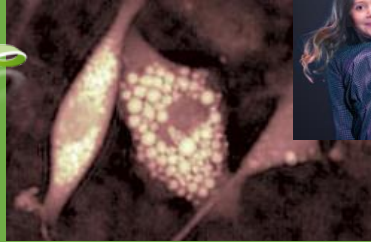


REGENT
 LIGHTING



SUSS MicroOptics

Lyncée tec



NANO LIVE
 Looking inside life



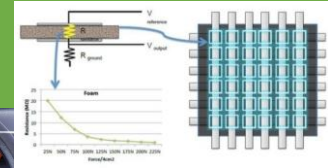
photon focus



Example of Industry Players Optics & Photonics

Smart fabric printing

S E F A R



TRUMPF

SYNOVA

SCHNYDER
 GEAR CUTTING SOLUTIONS

COHERENT

LUMENTUM

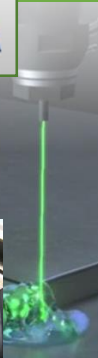
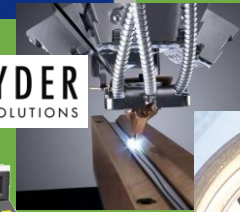
teltec
 systems ag



Laser marking



Laser cutting



Microfab,
MEMS, Sensors
and Packaging

SUSS MicroOptics

csem

ASML



esmart

Systems Engineering



TESA
TECHNOLOGY



ST
life.augmented



NEUROTHERAPEUTICS
aleva

Lambda
Health System



EMS
ELECTRO MEDICAL SYSTEMS

Example of
Industry Players
**Micro &
Nanosystems**

Sensors, Wireless and IOT

logitech



Gaitup



GEOSATIS
securing people



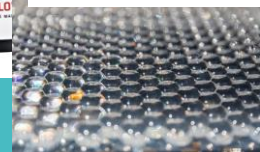
Watchmaking



BVLGARI
ROLEX



insolight



Advanced manufacturing



Supply chain



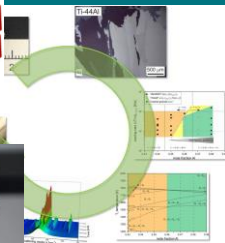
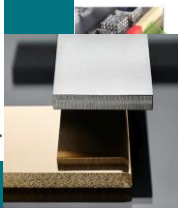
Cartier



PHILIP MORRIS
INTERNATIONAL



Example of Industry
players
Advanced Manufacturing
& Production



Materials processing

DEMAUREX

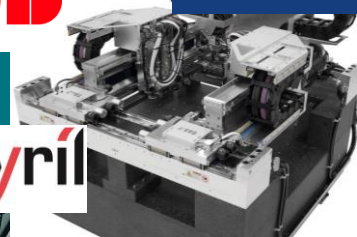


Asycube
Flexible feeders

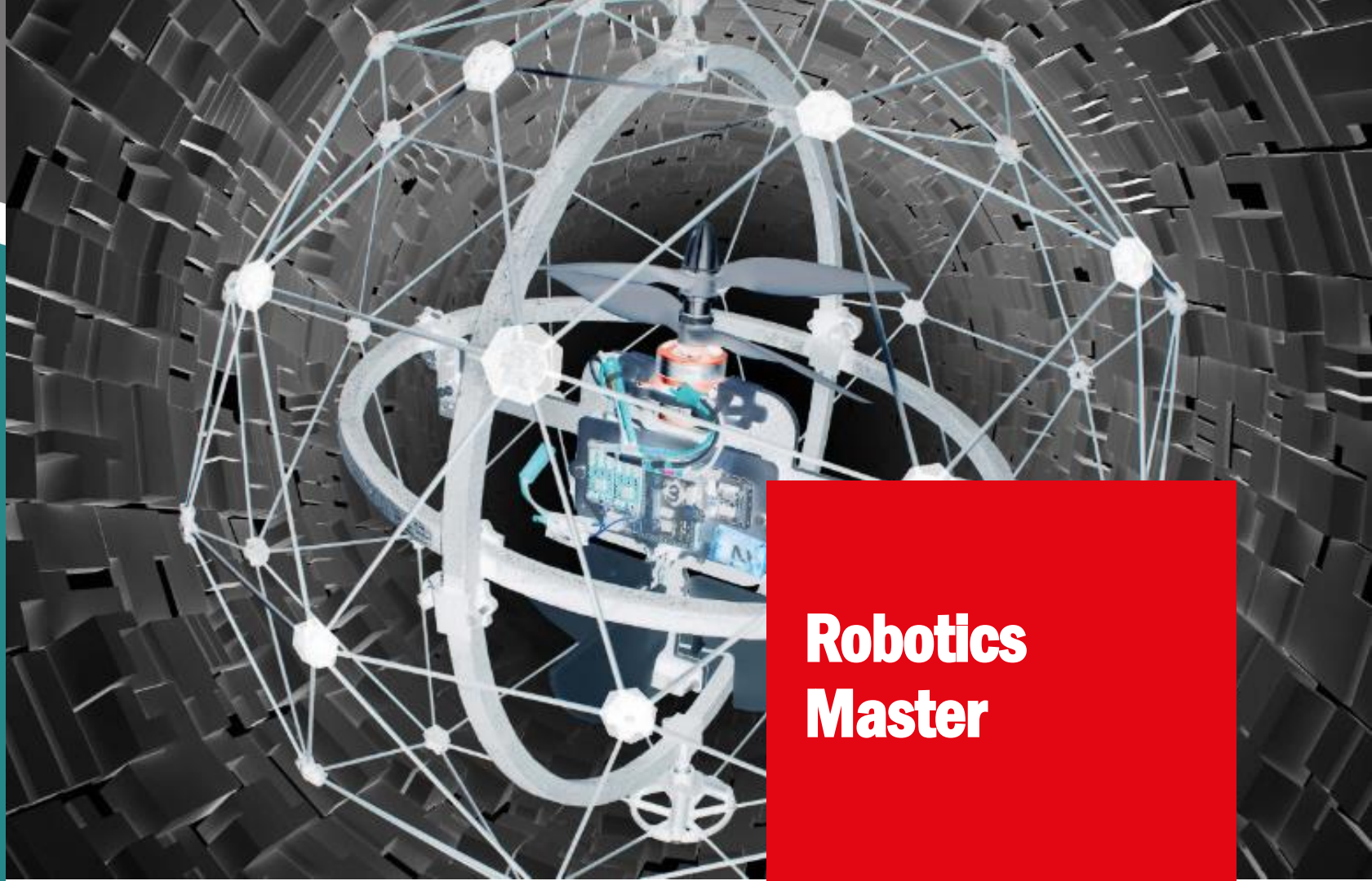


asyril

ETEL

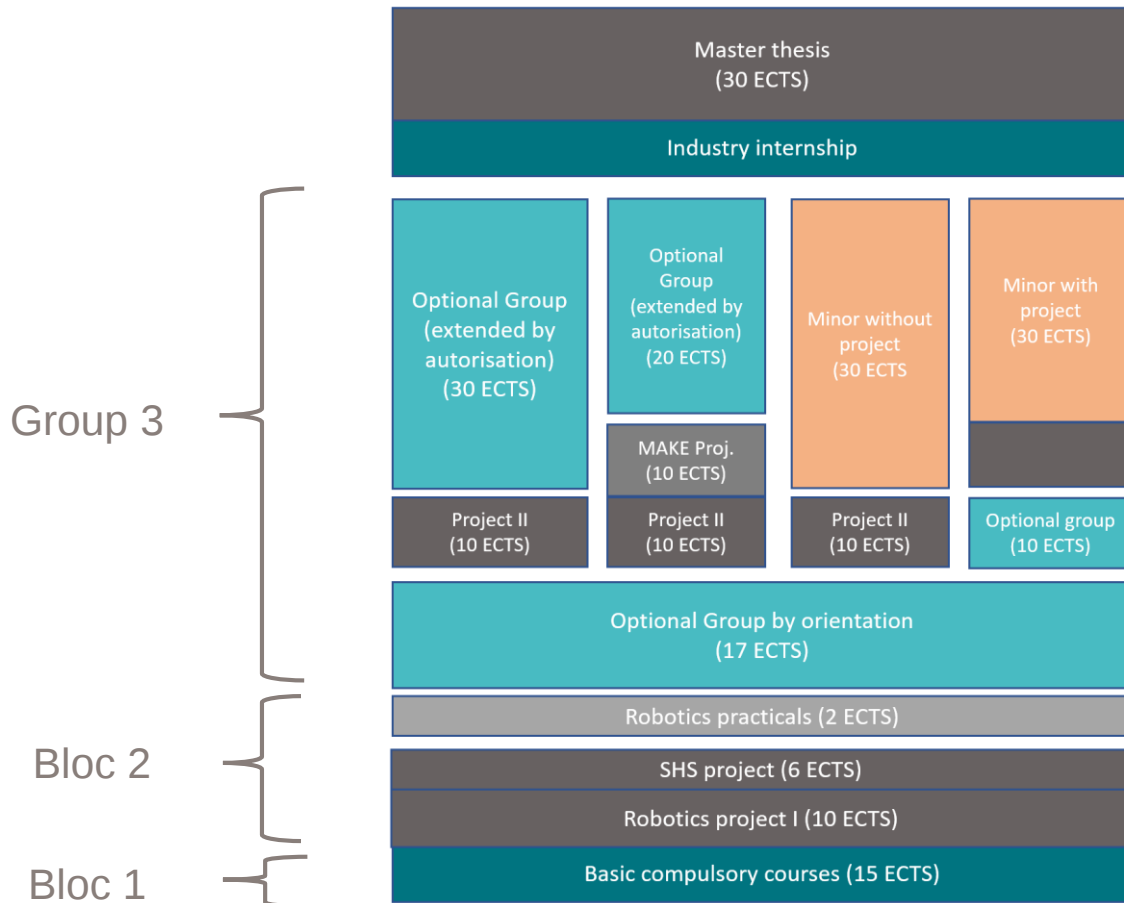


Industrial robotics



Robotics Master

Master Program structure

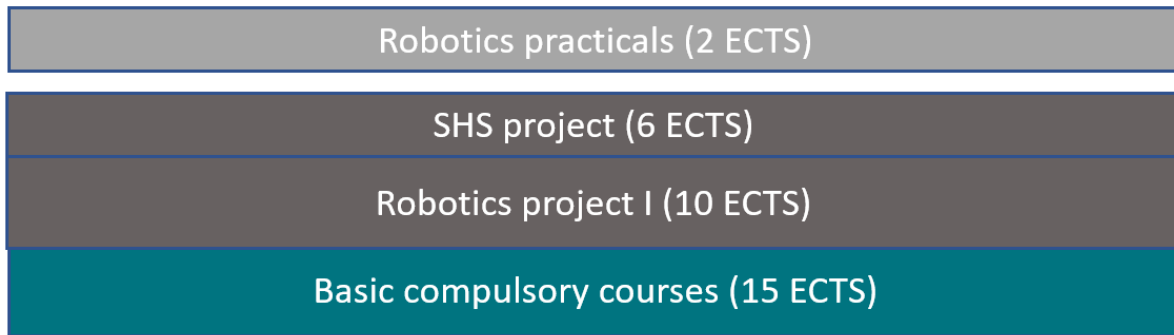
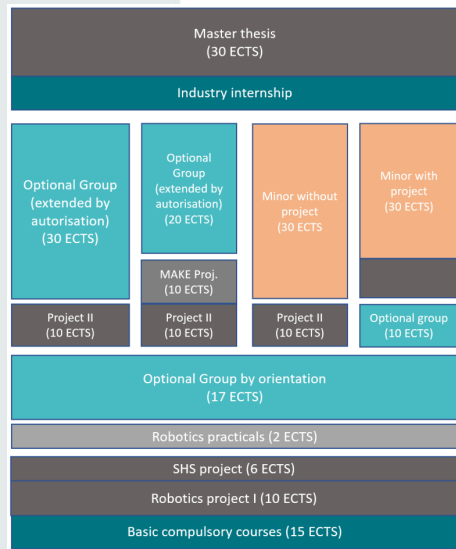


Robotics master

Official study plan Rulebook (in French)

validé par la vice-présidence pour les affaires académiques le 25 mai 2022

Code	Matières	Enseignants sous réserve de modification	Sections	Semestres						Crédits	Nbre places	Période des épreuves *	Type examen *
				MA1 / MA3			MA2						
				c	e	p	c	e	p				
	Bloc 1 "Basic compulsory courses"									15			
MICRO-455	Applied machine learning	Billard	MT	4						4		H	écrit
MICRO-452	Basics of mobile robotics	Mondada	MT	2	2					4		H	écrit
MICRO-450	Basics of robotics for manipulation	Bouri	MT	3						3		H	écrit
ME-425	Model predictive control	Jones	GM	2	2					4		H	écrit
	Bloc 2 "Compulsory practice"									18			
MICRO-453	Robotics practicals	Divers enseignants	MT						2	2		sem P	sans retrait
MICRO-580	Robotics project I	Divers enseignants	Divers	<-----10----->						10		sem A + P	sans retrait
HUM-nnn	SHS : introduction au projet	Divers enseignants	CDH	2		1				3		sem A	
HUM-nnn	SHS : projet	Divers enseignants	CDH					1	2	3		sem P	sans retrait
	Groupe 3 "Options"									57			
MICRO-581	Robotics project II	Divers enseignants	Divers	<-----10----->						10		sem A + P	sans retrait
	-- see list	Divers enseignants	Divers							47			
	Total des crédits du cycle master									90			



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

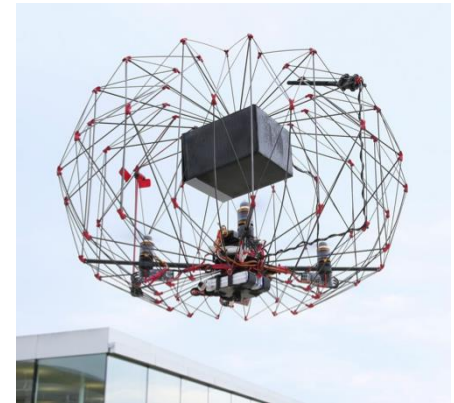
17 optional credits chosen among the optional courses of the chosen orientation, then free choice in robotics options.



Industrial Robotics



Medical Robotics

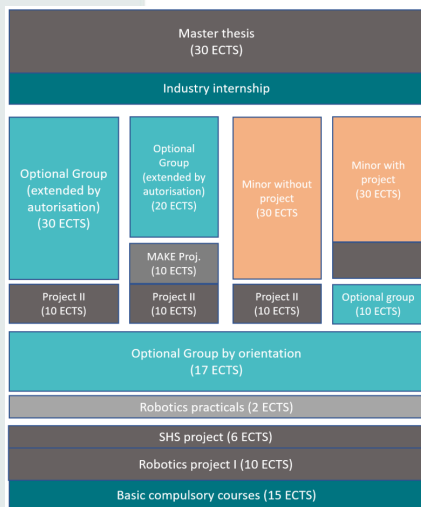


Mobile robotics

Orientations

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

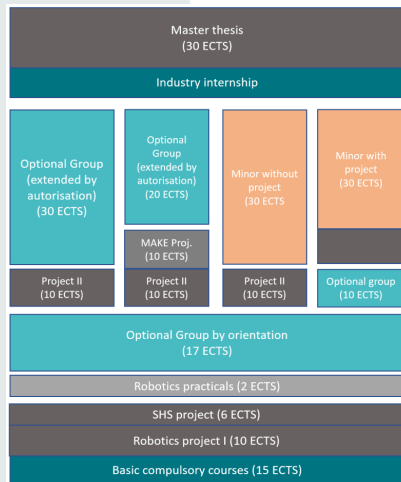
- A Industrial robotics
- B Medical robotics
- C Mobile robotics



Groupe à options
 Grand choix de cours
 (17 ECTS)

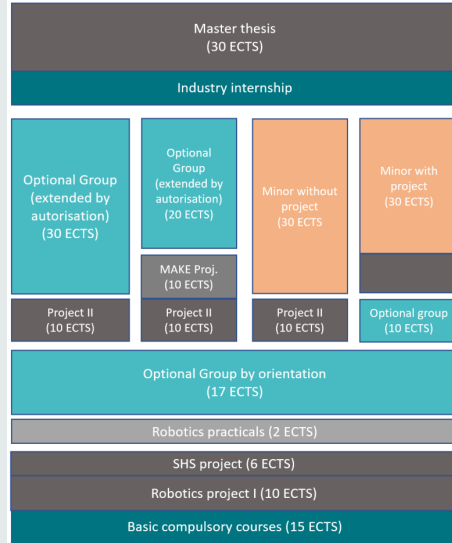
Optional courses and orientation	A	B	C	59
Advanced control systems	A	B	C	3
Advanced machine learning	A	B	C	4
Advanced MEMS & microsystems			C	3
Advanced satellite positioning			C	4
Analyse de produits et systèmes	A			2
Analysis and modeling of locomotion		B	C	4
Biomaterials		B		4
Commande embarquée de moteurs	A			2
Computational motor control		B	C	4
Computer vision	A	B	C	4
Conception mécanique intégrée	A			3
Continuous improvement of manufacturing systems	A			4
Controlling behavior in animal and robots		B	C	4
Deep learning	A	B	C	4
Distributed intelligent systems			C	5
Embedded systems	A	B	C	4
Evolutionary robotics			C	3
Flexible bioelectronics		B		4
Flying robots			C	4
Fundamentals of computer aided manufacturing	A			5
Fundamentals of neuroengineering			C	4
Haptic human robot interfaces	A			3
How technology shapes the workplace of the future	A	B	C	3
Image analysis and pattern recognition		B	C	4
Image processing I		B		3
Image processing II		B		3
Industrial automation	A			3
Industry dynamics, models & trends	A			4
Intelligent agents	A		C	6
Interdisciplinary project				10
Production management	A			5
Real-time embedded systems	A	B	C	4
Robotique industrielle et appliquée	A			2
Sensorimotor neuroprosthetics		B		4
Sensor orientation			C	4
Sensors in medical instrumentation		B		3
Signal processing for functional brain imaging		B		3
System identification	A	B	C	3
Systèmes mécatroniques	A	B	C	5

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



Optional Group
(extended by
autorisation)
(30 ECTS)

Project II
(10 ECTS)

Optional
Group
(extended by
autorisation)
(20 ECTS)

MAKE Proj.
(10 ECTS)

Project II
(10 ECTS)

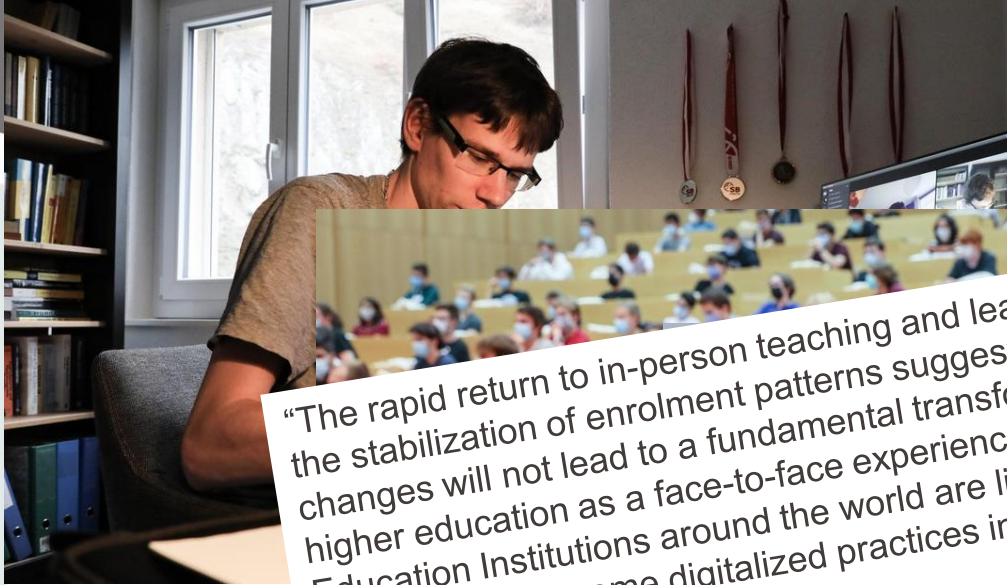
Minor without
project
(30 ECTS)

Project II
(10 ECTS)

Minor with
project
(30 ECTS)

Optional group
(10 ECTS)

Remembering phases during COVID-19



“The rapid return to in-person teaching and learning and the stabilization of enrolment patterns suggest that the changes will not lead to a fundamental transformation of higher education as a face-to-face experience. Higher Education Institutions around the world are likely to take forward at least some digitalized practices in the long term.”

Unesco, May 2022



Course attendance and online offer

- Take profit as much as possible from **presential courses** and interact with teachers and assitants
- 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 welocme xou 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
- Your **productive feedback** is essential to help teachers of the section to adapt and improve in a continuous 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

Let's set the example of a culture of respect

- Harassment, violence and discrimination are not tolerated here
- Provide and seek support
- Talk about it, bring up the problems



@ **EPFL**

- > go.epfl.ch/tsn (Trust and Support Network)
- > Take the online training on Moodle: « Promoting Respect »

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)



Individual support

Social and psychotherapeutic consultations are available to students and doctoral students.

- Do you feel demotivated, isolated, depressed, anxious?
- Do you have problems related to your studies or finances or other kinds of personal problems?
- Are you in need of [accommodations for your studies](#)?
- Are you facing difficulties and need someone neutral to talk to?
- If you do not know which consultation to contact, do not hesitate to ask for an initial interview with the Social consultation or to refer to the [list of difficulties, advice and contacts](#).



Get in touch with your study advisors

- Microengineering Master: [Sebastian Gautsch](#)
 - *Advanced Manufacturing* : [Prof. Yves Bellouard](#)
 - *Biomedical Technologies* : [Prof. Philippe Renaud](#)
 - *Micro/nanosystems* : [Prof. Herbert Shea](#)
 - *Photonics* : [Prof. Olivier Martin](#)
- Robotics master: [Prof. Francesco Mondada](#)
- Minor in Biomedical Technologies: [Prof. Philippe Renaud](#)
- Minor in Photonics: [Prof. Olivier Martin](#)
- Passerelle HES : [Sebastian Gautsch](#)
- Industry internships: [Hind Klinke](#)

Administration : [Isabelle Schafer](#)

Before contacting the Section ...





SCIENTES ET TECHNIQUES DE L'INGÉNIEUR >
GÉNIE ÉLECTRIQUE
ET MICROTECHNIQUE

INSTITUT

ÉDUCATION EL

EDUCATION MT

RECHERCHE

INNOVATION

Aperçu

Bienvenue du directeur de la section de microtechnique

La direction (SMT)

Heures de bureau

Journée d'accueil SMT

Conseil consultatif

La section MT en chiffres

Plans et règles d'étude

Témoignages

Canal Switchtube de la section

Les prix en Microtechnique

Associations d'étudiants

Q&A des étudiants Covid-19

Directives Covid-19 EPFL

Stages d'ingénieur

A propos

Procédure pour les étudiants

FAQ pour étudiants

Documents

Bachelor

Accueil – Bachelor MT

Bachelor en Microtechnique

Critères d'admission et candidature

Règles de prérequis – Bachelor Microtechnique

Règles de prérequis

Cycle Bachelor (MT)

Cycle propédeutique (MT)

Mobilité horizontale

A propos

Master

Master en Microtechnique

Master en Robotique

Mineur en technologies biomédicales

Mineur en Photonique

Plan d'étude – Cycle master min

Plan d'étude

ressources

Critères d'admission et candidature

Programme doctorale

EDMI – Microsystèmes et microélectronique

EDPO – Photonique

EDRS – Robotique, Contrôle et Systèmes intelligents

EDAM – Manufacturing

search

EN / FR

smt.epfl.ch

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

MT Section office

The section office (BM1136) is open everyday 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 appointment**:

- [Sebastian Gautsch](#) (section adjunct)
- [Prof. Christophe Moser](#) (section director)

Memo sticker

Bienvenue !

*Le présent document utilise la forme masculine, étant précisé cependant qu'il vise aussi bien les femmes que les hommes.
Nos nouveaux étudiants Master trouveront quelques compléments d'information en bas de page.*

Bienvenue en Microtechnique

Vous avez, en toute objectivité, choisi la meilleure section !

Nous avons regroupé ici quelques éléments partagés par vos prédécesseurs

- **Guide de préparation** pour les nouveaux étudiants Bachelor
- **Règlements et procédures** : bien entendu, tous ces éléments sont à votre disposition
- **IS-Academia** : l'outil de gestion de vos études à l'EPFL ! Notez qu'il est très utile, mais faites attention aux nombres de places disponibles : pour les nouveaux étudiants, il faut s'inscrire rapidement !
- **Moodle** : vous serez automatiquement inscrit à certains cours ! Pour le moment, rien de prévu.
- **Courseware & SwitchTube**
- **BEAST** : le point d'accès à toutes les ressources de la Bibliothèque « Sciences de la Terre et de l'Environnement », sans qu'il ne soit forcément nécessaire d'être inscrit à un cours
- **Poséidon** : le service de l'EPFL dédié au conseil d'achat et au support technique. C'est le plus performant du marché : la tâche la plus exigeante est de le faire fonctionner !
- **Drive des Microtechniciens** : vérifiez que vous êtes bien connecté à l'EPFL. Les instructions sur l'utilisation du drive sont disponibles dans le dossier « Drive ».
- **Discord des Microtechniciens** : pour communiquer et poser des questions. Le lien est dans le dossier « Ressources » de ce serveur.
- A noter encore que les premières années ont un groupe **Telegram** « MT1-2-3 ».
- Et bien entendu, toujours à votre écoute pour vous soutenir et vous accompagner : **Johanne Pinel**
- Pour terminer, nous vous rappelons qu'il est très important de vérifier régulièrement vos emails !

Mais encore, pour nos étudiants Master :

- **Guide de préparation** pour les nouveaux étudiants Master
- Lignes directrices des **projets de semestre**
- Lignes directrices des **projets de master**
- **Stages en entreprise**
- **Procédure pour les étudiants**
- Lire la présentation des **stages SMT** (PDF)



EPFL
■ **section**
de microtechnique



**Welcome
on Board!**

Q & A

**Download the
presentation**



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

