EPFL

mt

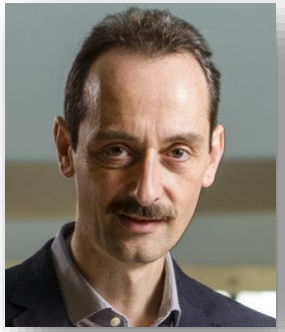
microtechnique
microengineering
section

Your Master studies

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

Welcome !

Dr. Sebastian Gautsch
Section adjunct



Prof. Francesco Mondada
Director Robotics Master

Prof. Christophe Moser
Section director

Giovanni Boero
Study advisor
Micro & Nanosystems

Yves Bellouard
Study advisor
Advanced Manufacturing

Olivier Martin
Study advisor
Optics & Photonics

Your EPFL e-mail !!!

1stname.lastname@epfl.ch

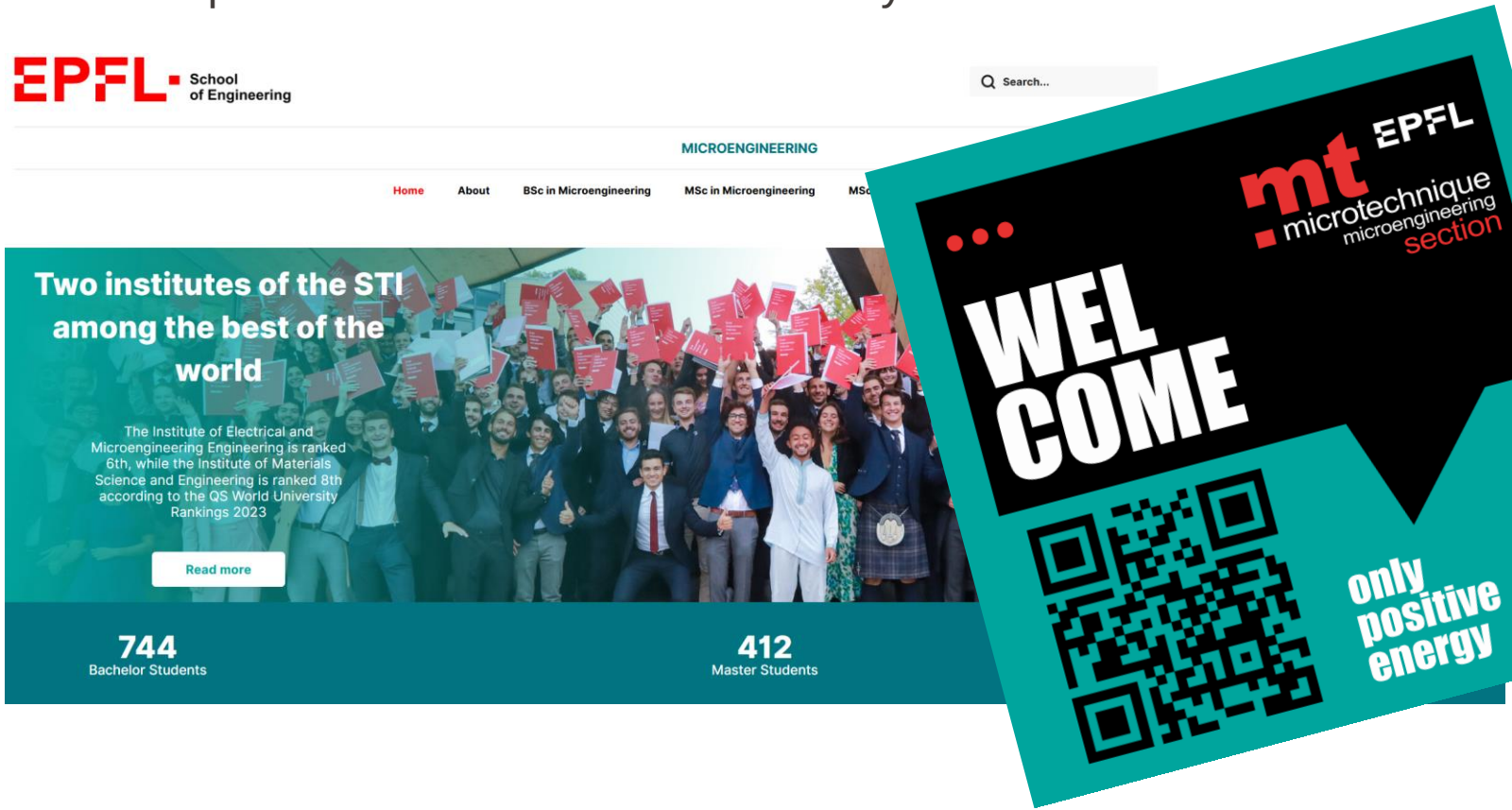
- Should now become your reference account
- Important info regarding your studies will be sent to this address

«Ignorantia juris non excusat»

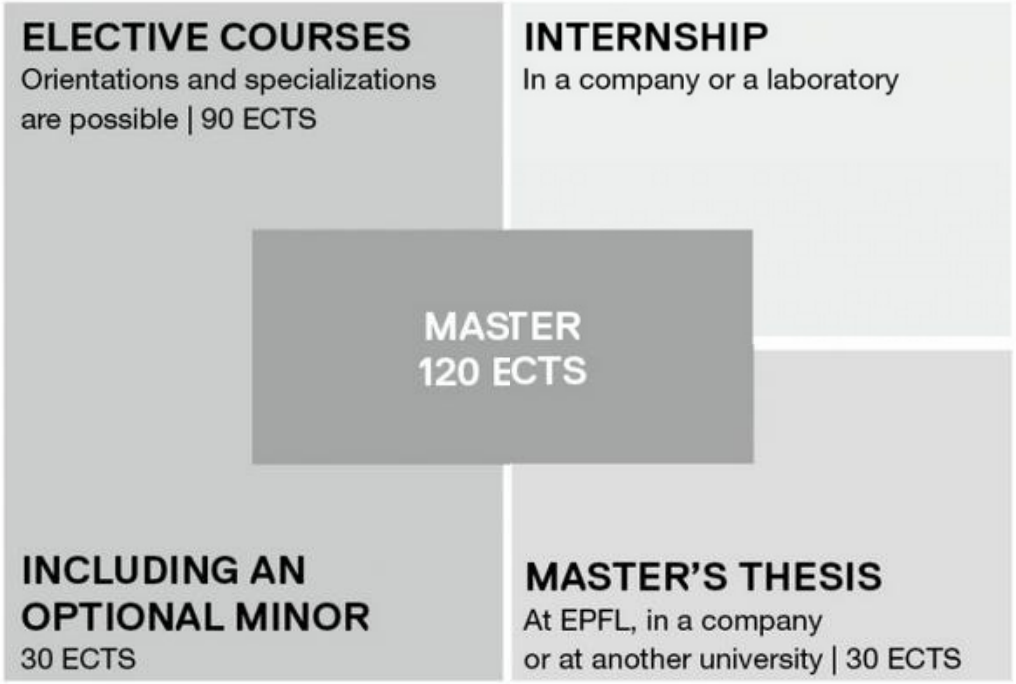
- In case of doubt, please consult official regulations for your studies

Section website: smt.epfl.ch

- Find important and useful info & links for your studies



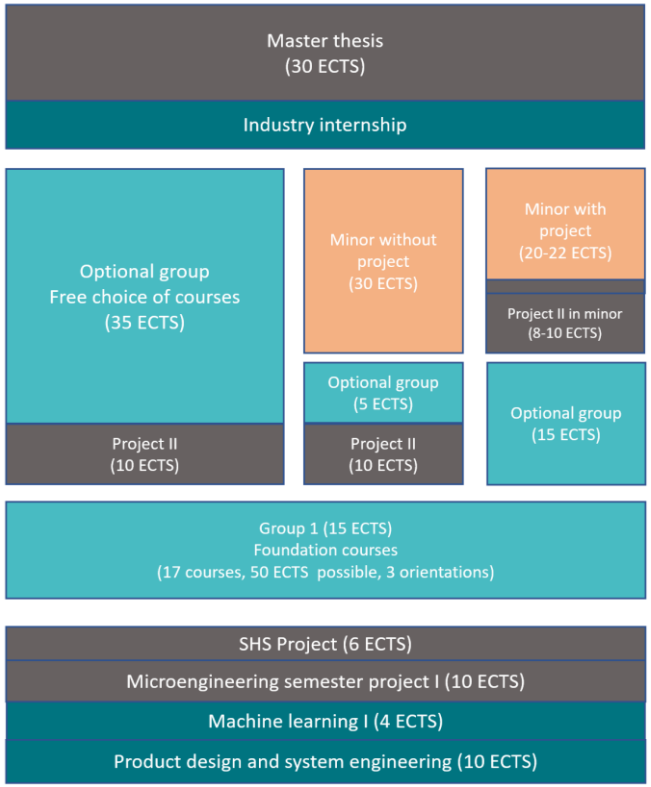
Master program structure



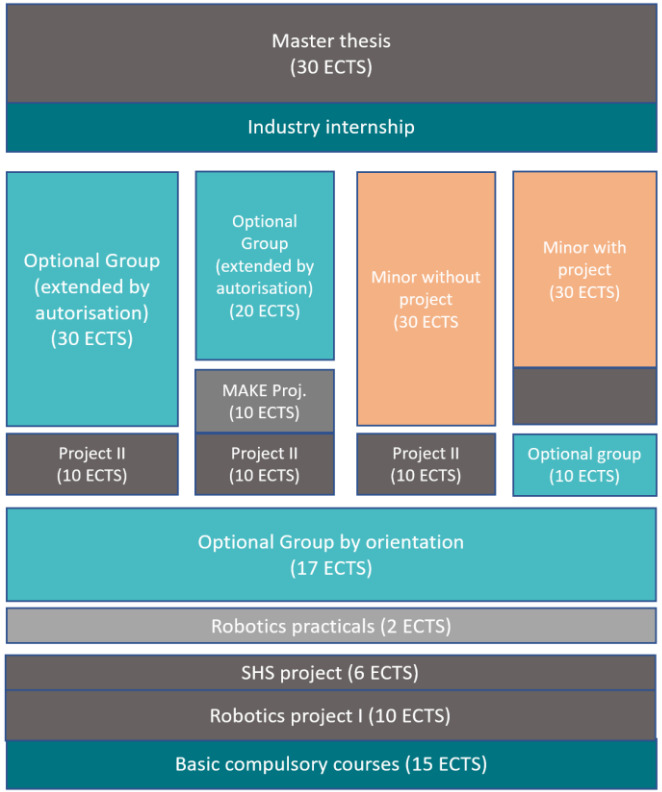
https://www.epfl.ch/education/master/study-programs-structure/

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:

Deadlines

- **Autumn semester**: from August until **Friday of the second week** of the autumn semester
- **Spring semester**: from January until **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 degree

- Bloc

A **bloc 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/

Which study plan to follow ?

- Study plans can evolve each year
- The study plan you have to follow and that will determine the completion of your blocs and groups is the one from the 1st semester of your master studies

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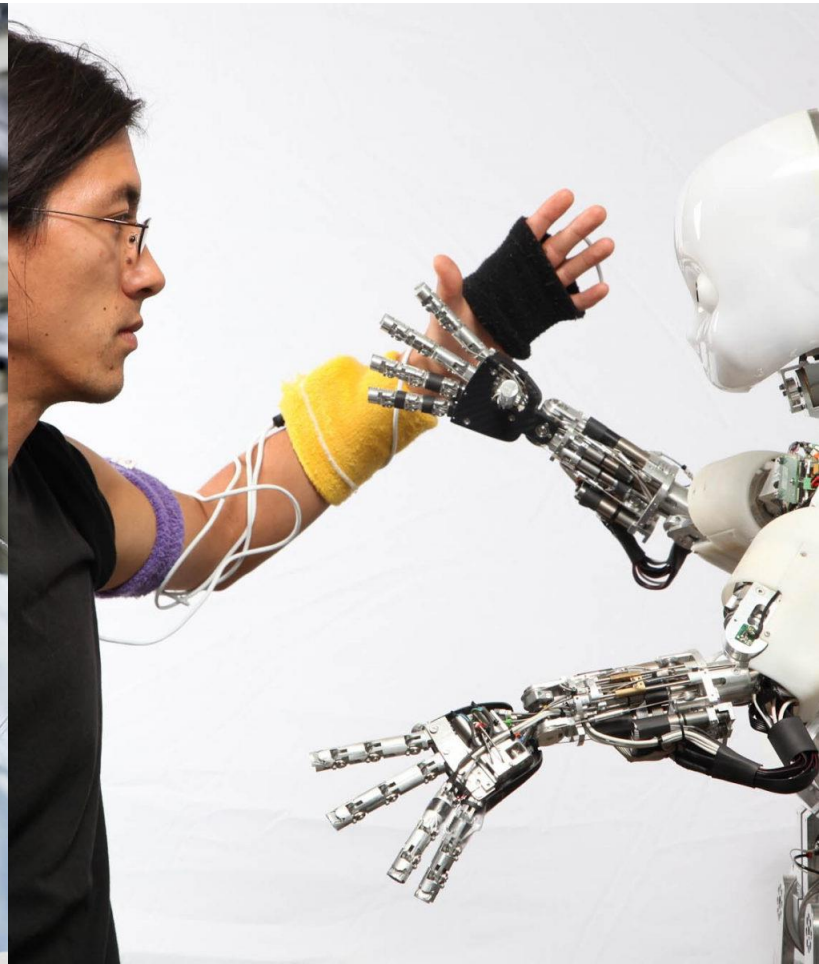
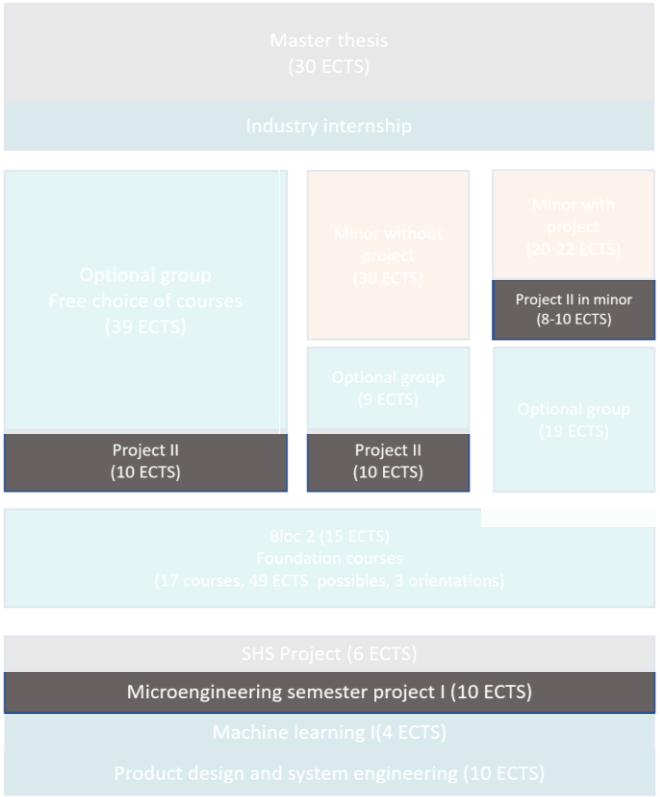
2 mandatory semester projects

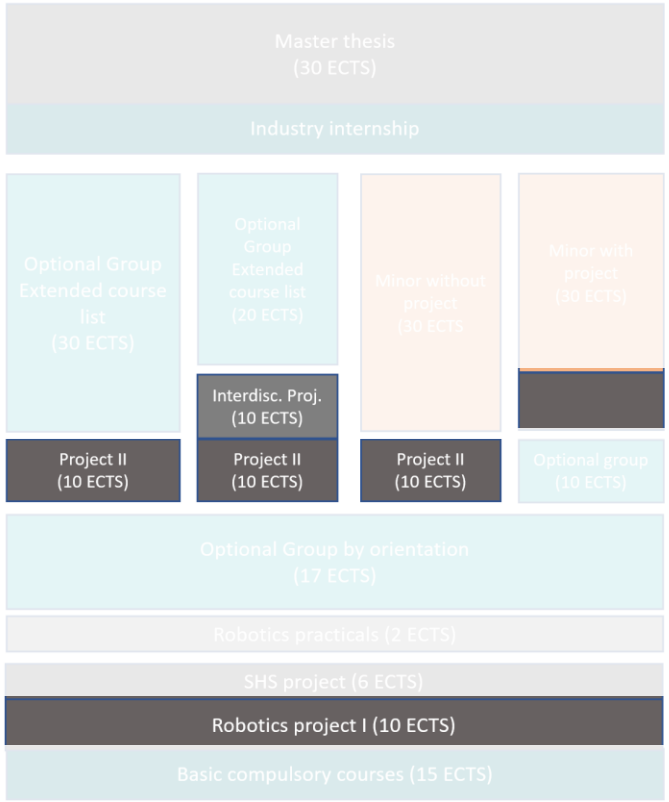


Semester projects ...

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).

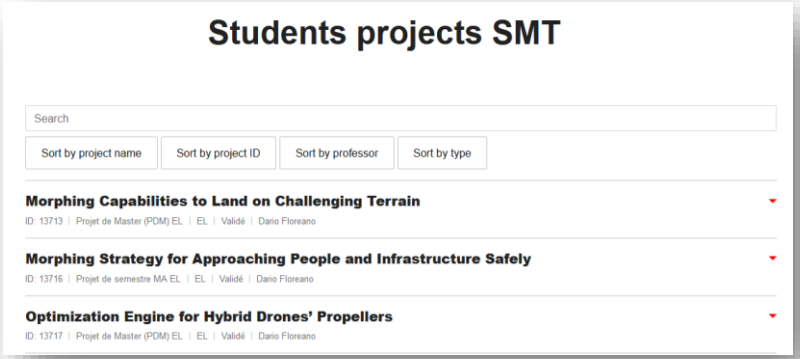
Attention, the semester project is non-withdrawable. Once enrolled, it is no longer possible to change.

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**



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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

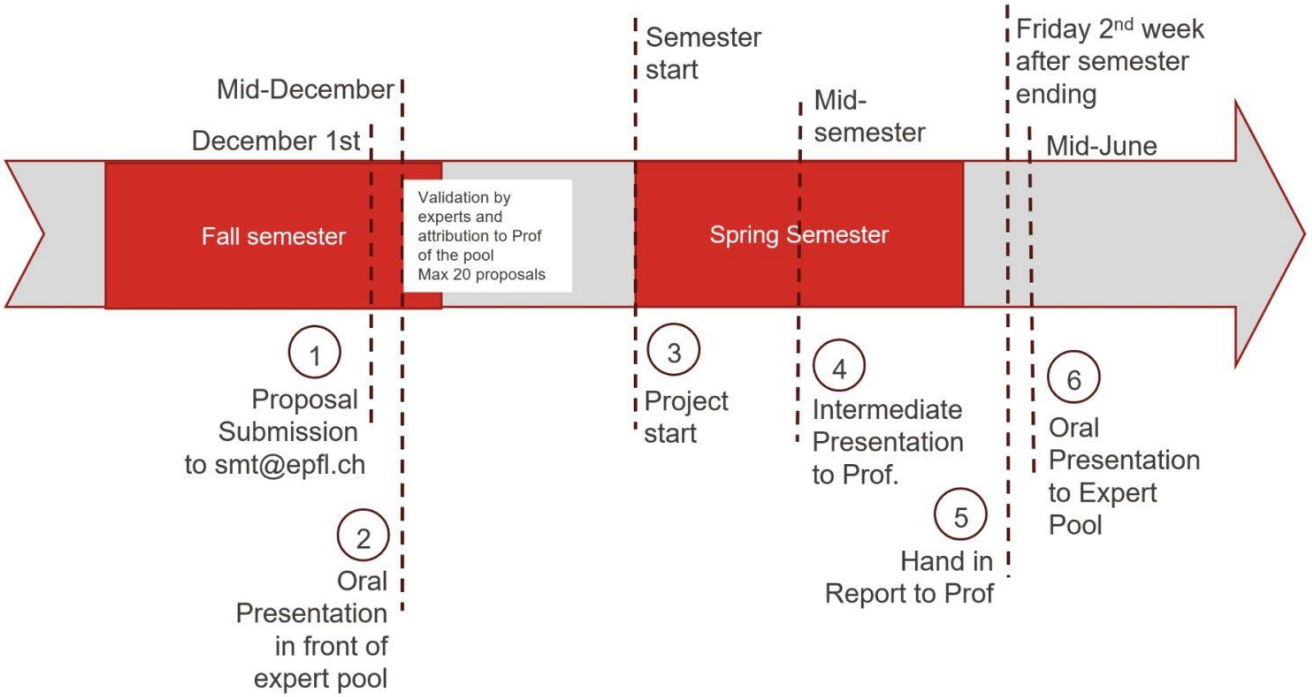
A written report is mandatory at the end of the project
Extensive Semester/Master thesis report template
Example of a typical semester project report

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

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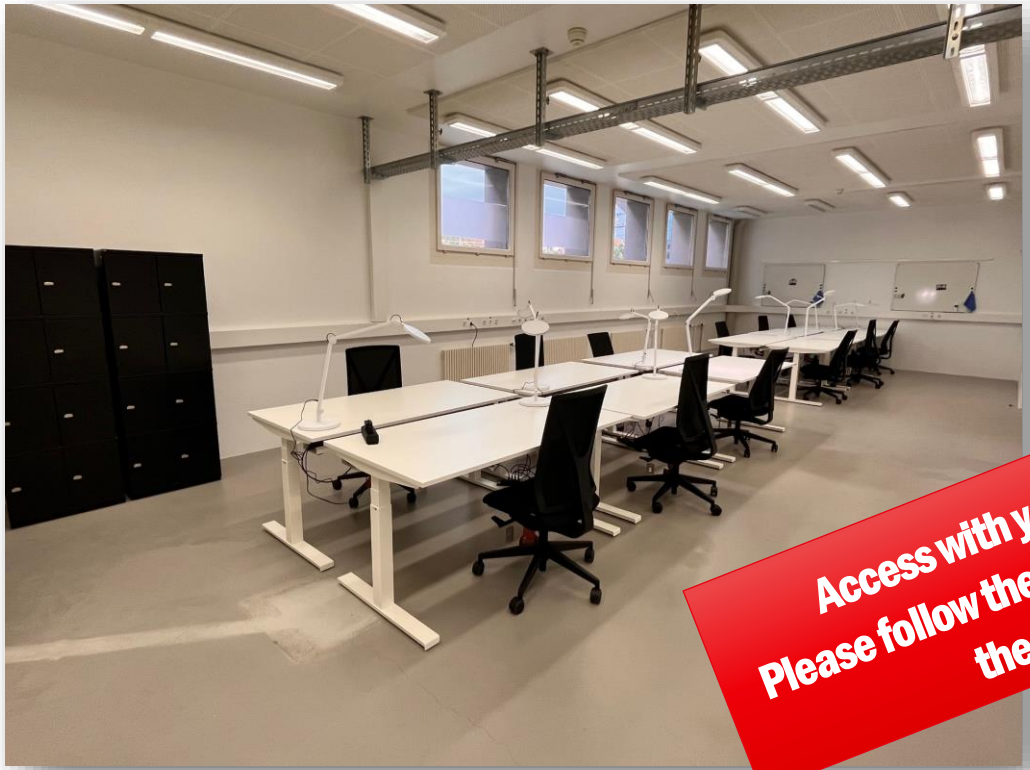
Study room in BM 0246
Exclusively for SMT Master students !

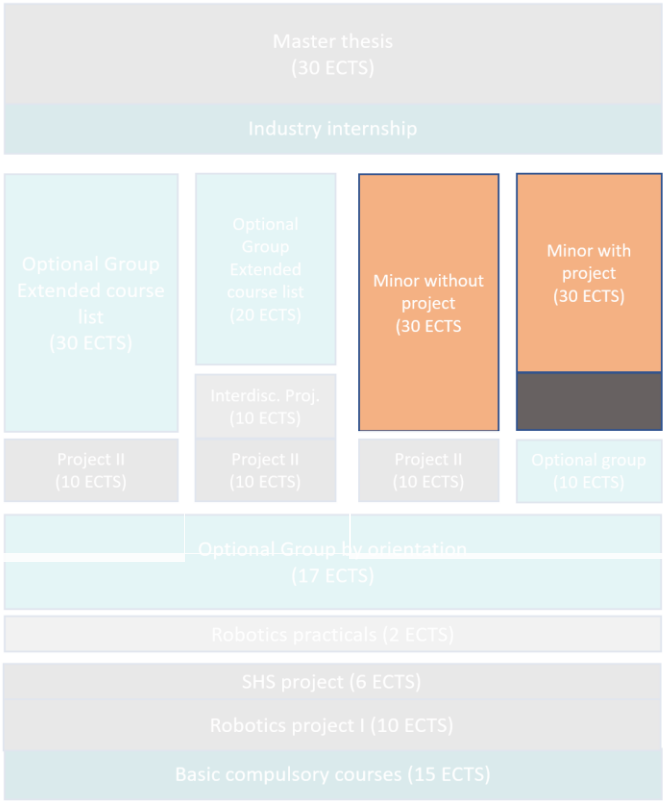


Access with your Camipro card
Please follow the rules and guidelines of the study room !

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 of your optional group and for the 90 ECTS of course credits of you Master program.**

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

Recommended and possible Minors

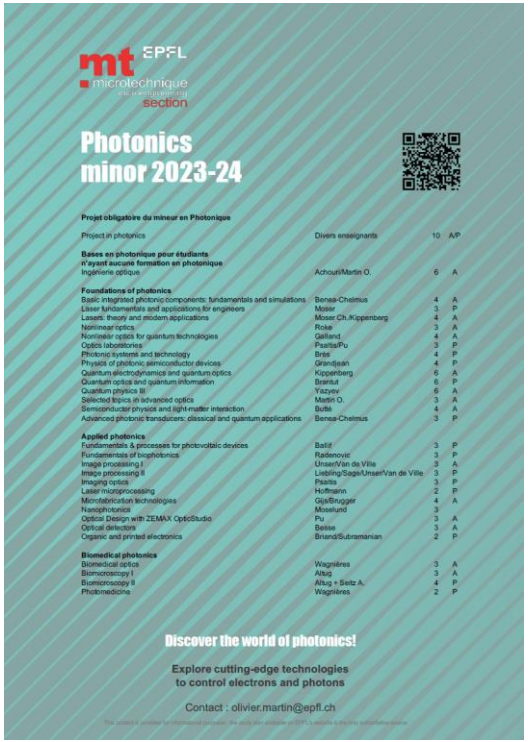
Administrated and recommended by the section

Mineurs / Minors	Type	Section	Contact	Microengineering	Robotics
Data and internet of things	Interdiscipl.	EL	Atienza D.	r	c
Energie / Energy	Interdiscipl.	GM	Maréchal F.	r	r
Imaging	Interdiscipl.	MT	Sage Daniel	r	r
Ingénierie pour la durabilité / Engineering for sustainability	Interdiscipl.	SIE	Gilliéron P.Y. , Leterrier	r	r
Management, technologie et entrepreneuriat / Technology management and entrepreneurship	Interdiscipl.	MTE	de Rassenfosse G.	r	c
Neuro-X	Discipl.	NX	Hummel F, Micera S.	r	r
Photonique / Photonics	Interdiscipl.	MT	Martin O.	r	r
Physique des systèmes vivants / Physics of living systems	Interdiscipl.	SV	Persat A.	r	r
Science et ingénierie quantiques / Quantum science and engineering	Discipl.	SIQ	Macris N. et Klinke H.	r	r
Technologies biomédicales / Biomedical technologies	Interdiscipl.	MT	Guiducci C.	r	r
Technologies spatiales / Spacial technologies	Interdiscipl.	EL	Kneib J.-P.	r	r
Science et ingénierie computationnelles / Computational science and engineering	Discipl.	MA	Pouchon O.	r	c
Informatique / Computer science	Discipl.	IN	Hazboun E.	c	r
Architecture	Discipl.	AR	Kochnitzky Palluel L.	c	c
Computational Biology	Interdiscipl.	IN	Salathé M.	c	c
Biotechnologie / Biotechnology	Interdiscipl.	CGC	Pick H.	c	c
Chimie et génie chimique / Chemistry and chemical engineering	Discipl.	CGC	Marendaz J.-L.	c	c
Cyber security	Discipl.	IN	Hazboun E.	c	c
Data science	Discipl.	SC	Hazboun E.	c	c
Design intégré, architecture et durabilité / Integrated Design, Architecture and Sustainability (IDEAS	Interdiscipl.	AR	Andersen M., Rey E.	c	c
Territoires en transformation et climat / Territories in transformation and climate (TTC)	Interdiscipl.	AR	Joost St.	c	c
Génie civil / Civil engineering	Discipl.	GC	Turberg P.	c	c
Génie électrique et électronique / Electrical and electronic engineering	Discipl.	EL	Gay-Balmaz Ph.	c	c
Génie mécanique / Mechanical engineering	Discipl.	GM	Prenleloup A.	c	c
Humanités digitales, médias et société	Interdiscipl.	DH	Collins Kathleen	c	c
Ingénierie des systèmes / Systems Engineering	Interdiscipl.	MTE	Weber Th.	c	c
Ingénierie des sciences du vivant / Life sciences engineering	Discipl.	SV	Bezler B.	c	c
Ingénierie financière / Financial engineering	Discipl.	IF	Malamud S.	c	c
Mathématiques / Mathematics	Discipl.	MA	Pouchon O.	c	c
Physique / Physics	Discipl.	PH	Mari D.	c	c
Science et génie des matériaux / Materials science and engineering	Discipl.	MX	Marselli B.	c	c
Sciences et ingénierie de l'environnement / Environmental sciences and engineering	Discipl.	SIE	Gilliéron P.-Y	c	c
Statistique / Statistics	Discipl.	MA	Mhalla L.	c	c
Systèmes de communication / Communication systems	Discipl.	SC	Hazboun E.	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

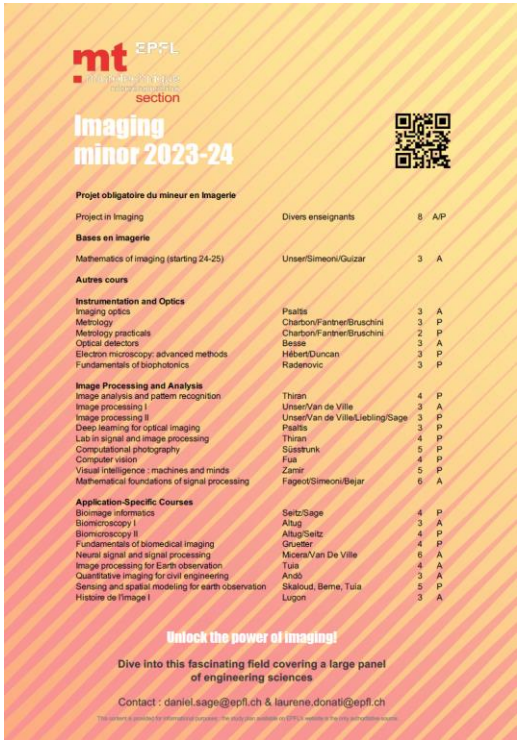
Projet obligatoire du mineur en Photonique

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 !

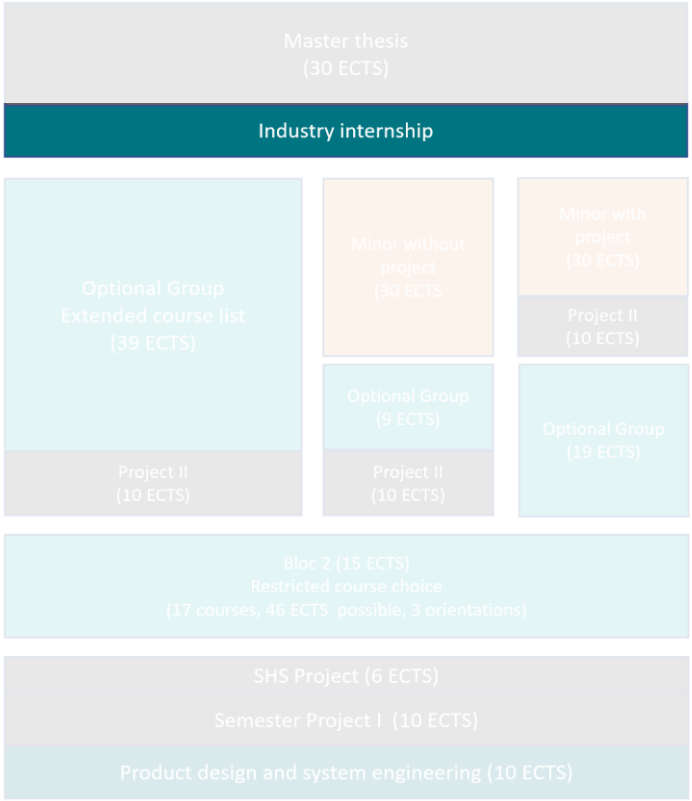
Join this program to transform the way we understand and treat the human body

Contact : carlotta.guiducci@epfl.ch

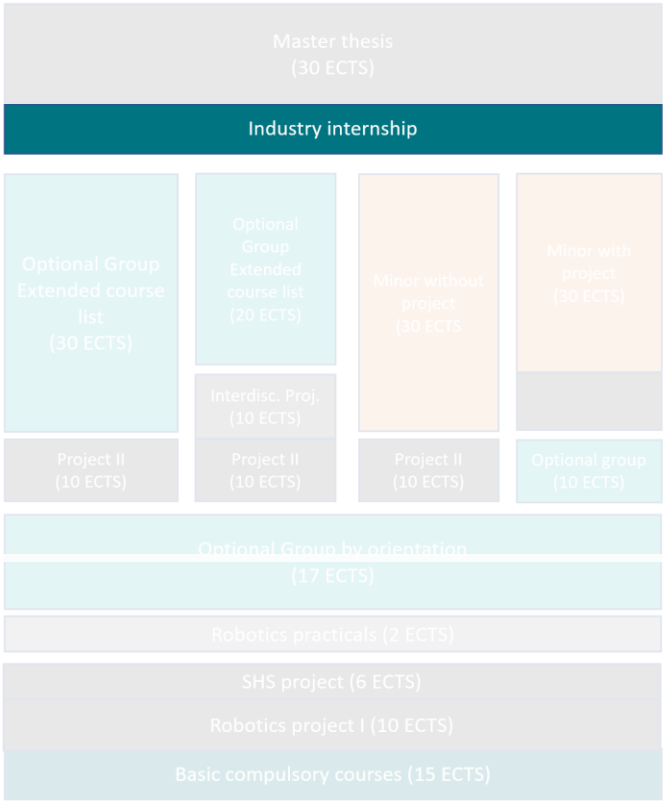
https://sti.epfl.ch/wp-content/uploads/2023/02/Mineur-Technologies-Biomedicales.pdf
https://sti.epfl.ch/wp-content/uploads/2023/02/Prsentation_Mineur-Photonique.pdf
https://imaging.epfl.ch/minor-in-imaging/

Industry Internship

Microenginering



Robotics



Mandatory Industry immersion: 2 options

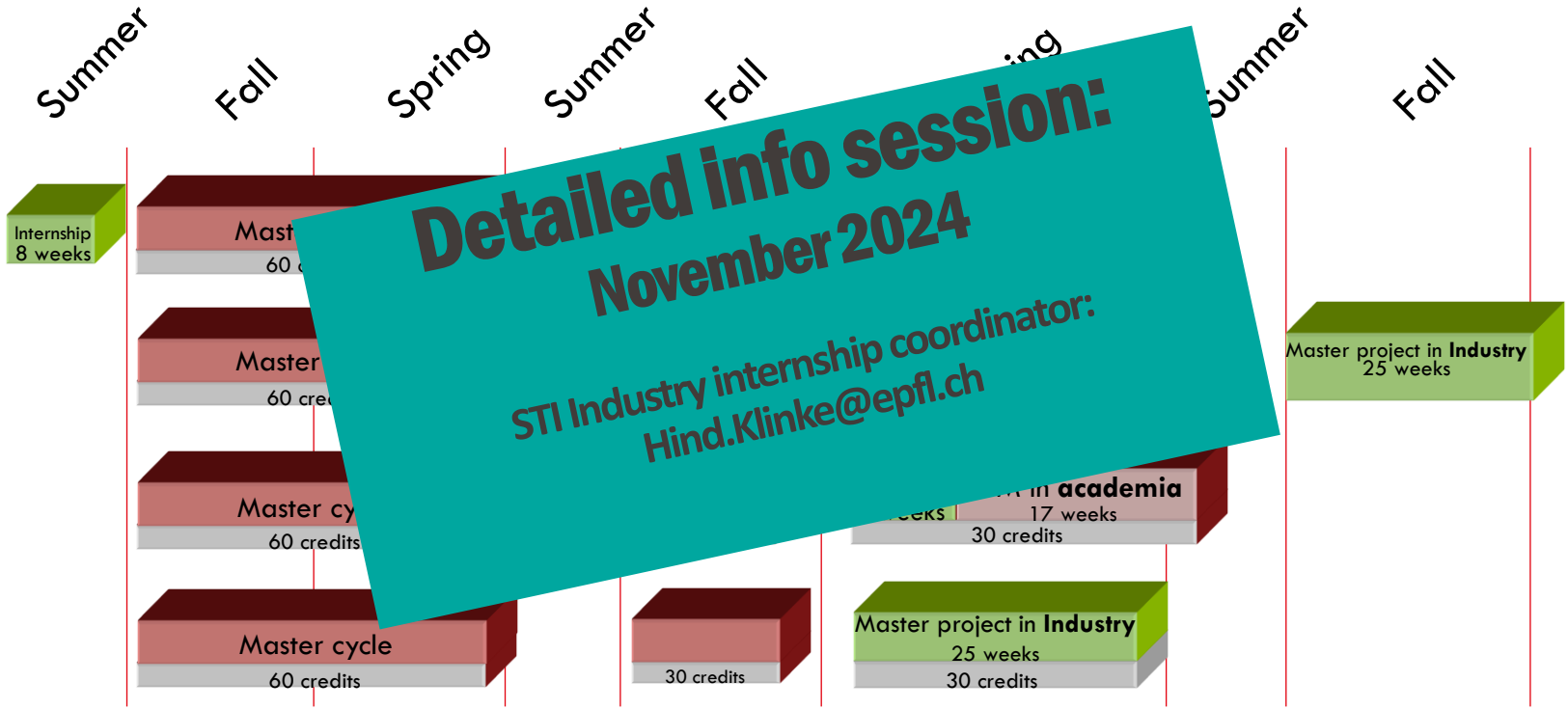
Internship

- Minimum duration of 2 month, up to 6 months
- Immersion into industry
- Familiarize with company processes
- 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 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:
November 2024

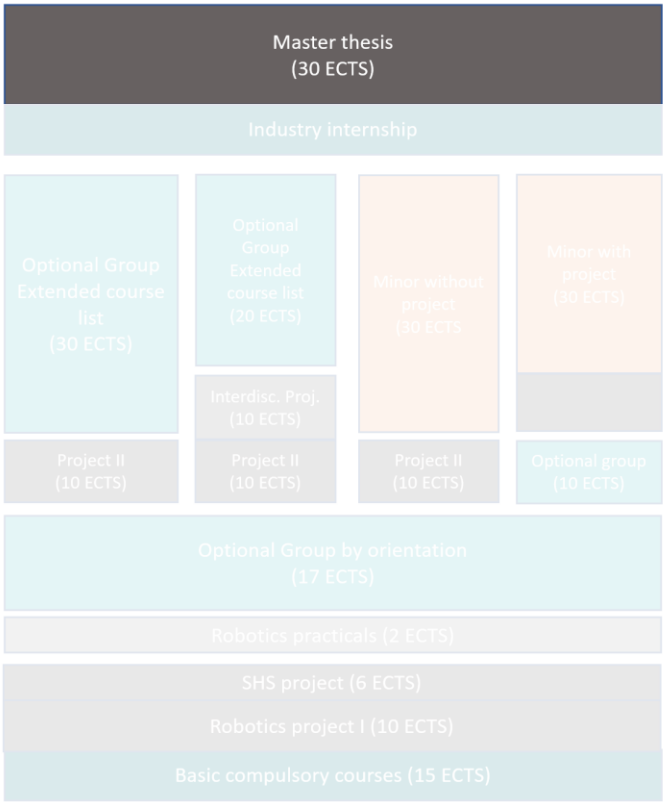
STI Industry internship coordinator:
Hind.Klinke@epfl.ch

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

Master thesis

Microenginering

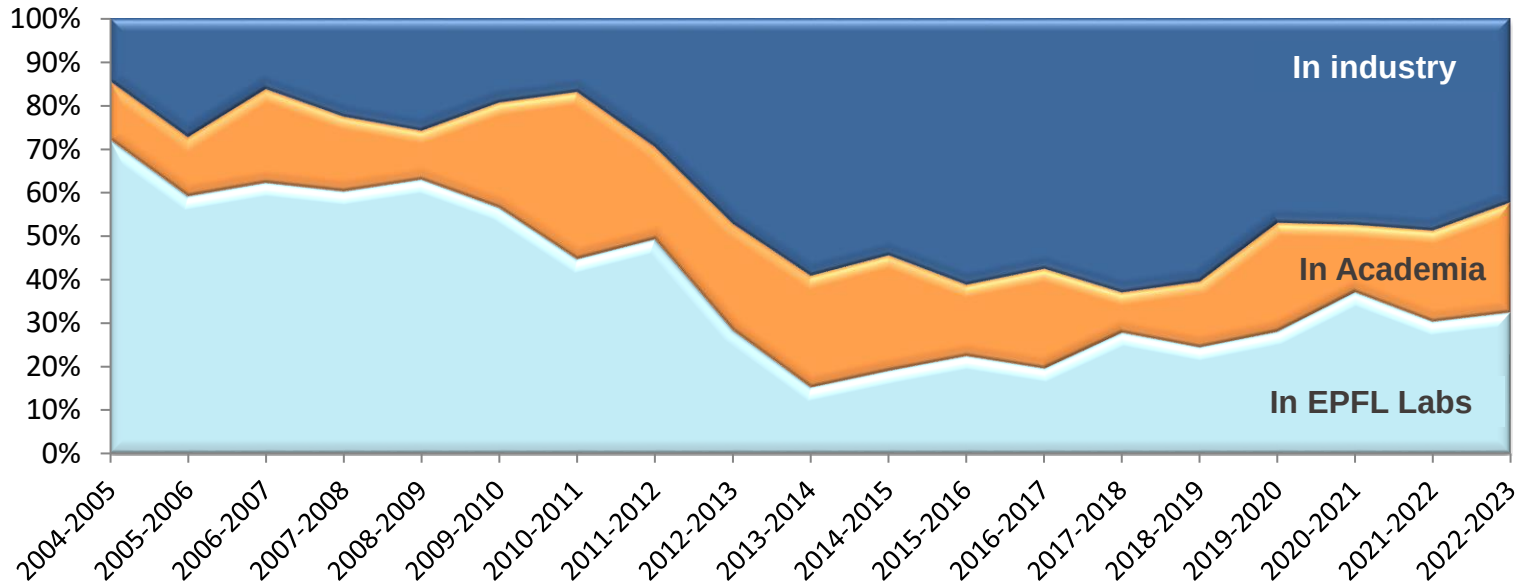
Robotics



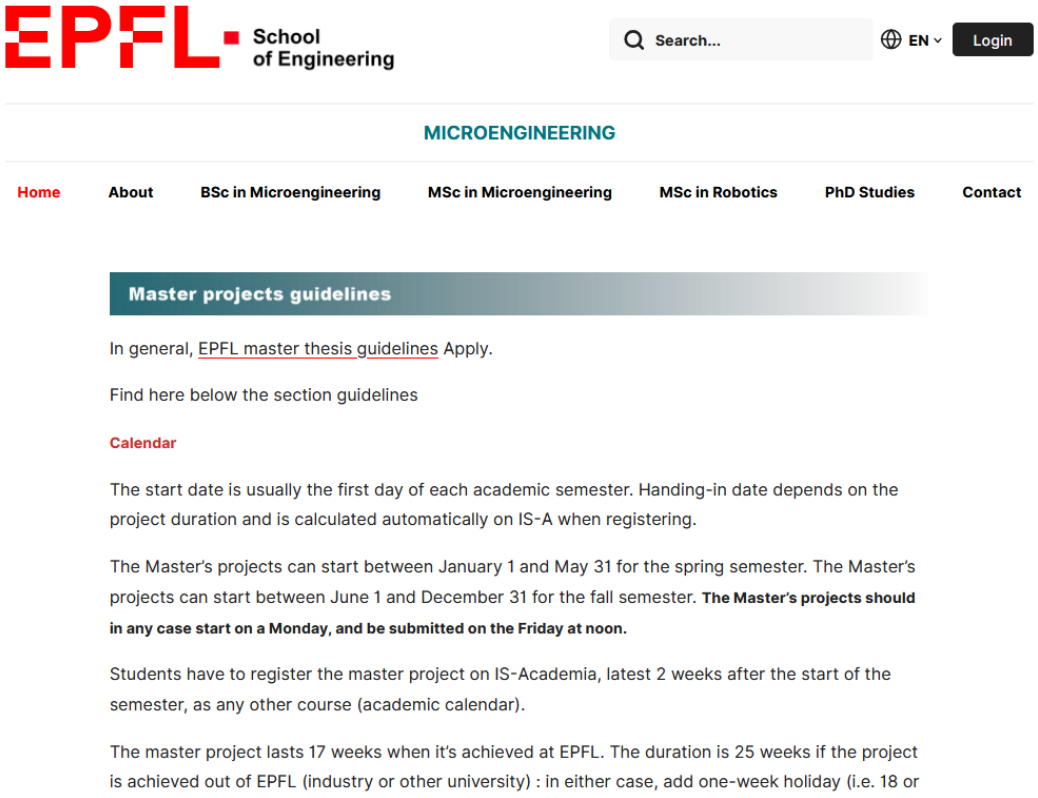
Master thesis location

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 guidelines



EPFL School of Engineering

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MICROENGINEERING

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

Master projects guidelines

In general, EPFL master thesis guidelines Apply.

Find here below the section guidelines

Calendar

The start date is usually the first day of each academic semester. Handing-in date depends on the project duration and is calculated automatically on IS-A when registering.

The Master's projects can start between January 1 and May 31 for the spring semester. The Master's projects can start between June 1 and December 31 for the fall semester. **The Master's projects should in any case start on a Monday, and be submitted on the Friday at noon.**

Students have to register the master project on IS-Academia, latest 2 weeks after the start of the semester, as any other course (academic calendar).

The master project lasts 17 weeks when it's achieved at EPFL. The duration is 25 weeks if the project is achieved out of EPFL (industry or other university) : in either case, add one-week holiday (i.e. 18 or

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

Microengineering/Robotics Passerelle program

CODE	MATIERES	ENSEIGNANTS sous réserve de modification	SEMESTRES												CREDITS ECTS	NBRE PLACES	EXAMENS *			
			AUT						PRI								HIVER	ETE	RETRAIT **	FORME
			cours	exercices	labo	TP	Course based projet	ind. proj.	cours	exercices	labo	TP	Course based projet	ind. proj.						
Bloc 1 "Branches de base"															33					
MATH-203(a)	Analysis III (for SV, MT)	Monin	2	2											4		H			écrit
MATH-207(a)	Analysis IV (for SV, MT)	Zemel							2	2					4			E		écrit
ME-326	Automatique et commande numérique	Karimi + Salzmann	4	1		1									6		H			écrit
EE-209	Eléments de statistiques pour les data sciences	Krzakala							2	1					3			E		écrit
MICRO-321(a)	Ingénierie optique (pour MT)	Achouri/Martin + Achouri	2	1		3									6		H			écrit
PHYS-201(c)	Physique générale : électromagnétisme	Boero	4	2											6		H			écrit
MICRO-310(a)	Signaux et systèmes I (pour MT)	Unser	2	2											4		H			écrit
Bloc 2 "Branches d'approfondissement"															24					
MICRO-313/314	Actionneurs et systèmes électromagnétiques I, II	Köchli/Perriard + Hodder/Köchli/Perriard	2						2	1		2			7			E		écrit
MICRO-330	Capteurs	Boero/Shea							5						5			E		écrit
MICRO-332	Microfabrication practicals	Brugger/Sayah					2								2		sem A		sans retrait	
MICRO-311(a)	Signaux et systèmes II (pour MT)	Vandergheynst							2	2					4			E		écrit
MICRO-315	Systèmes embarqués et robotique	Mondada							2			4			6			sem P	sans retrait	
Total des crédits de la passerelle HES															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 :

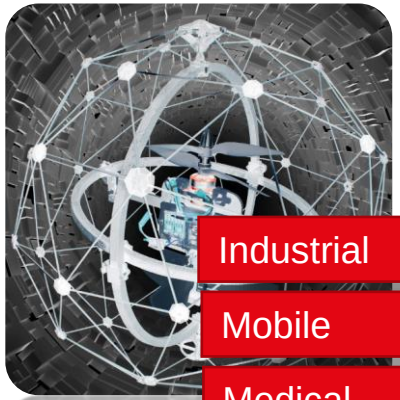
- vous avez obtenu au moins 30 crédits ECTS de passerelle HES et
- vous n'êtes pas en échec définitif à la passerelle HES.

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.

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

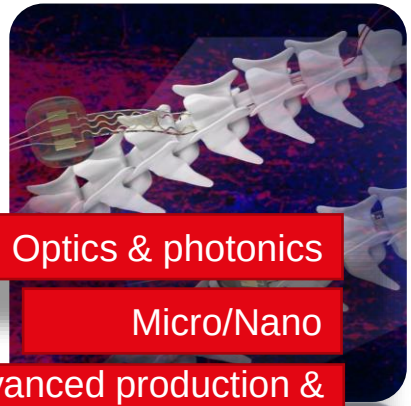
Specifics about the 2 Masters

Robotics master



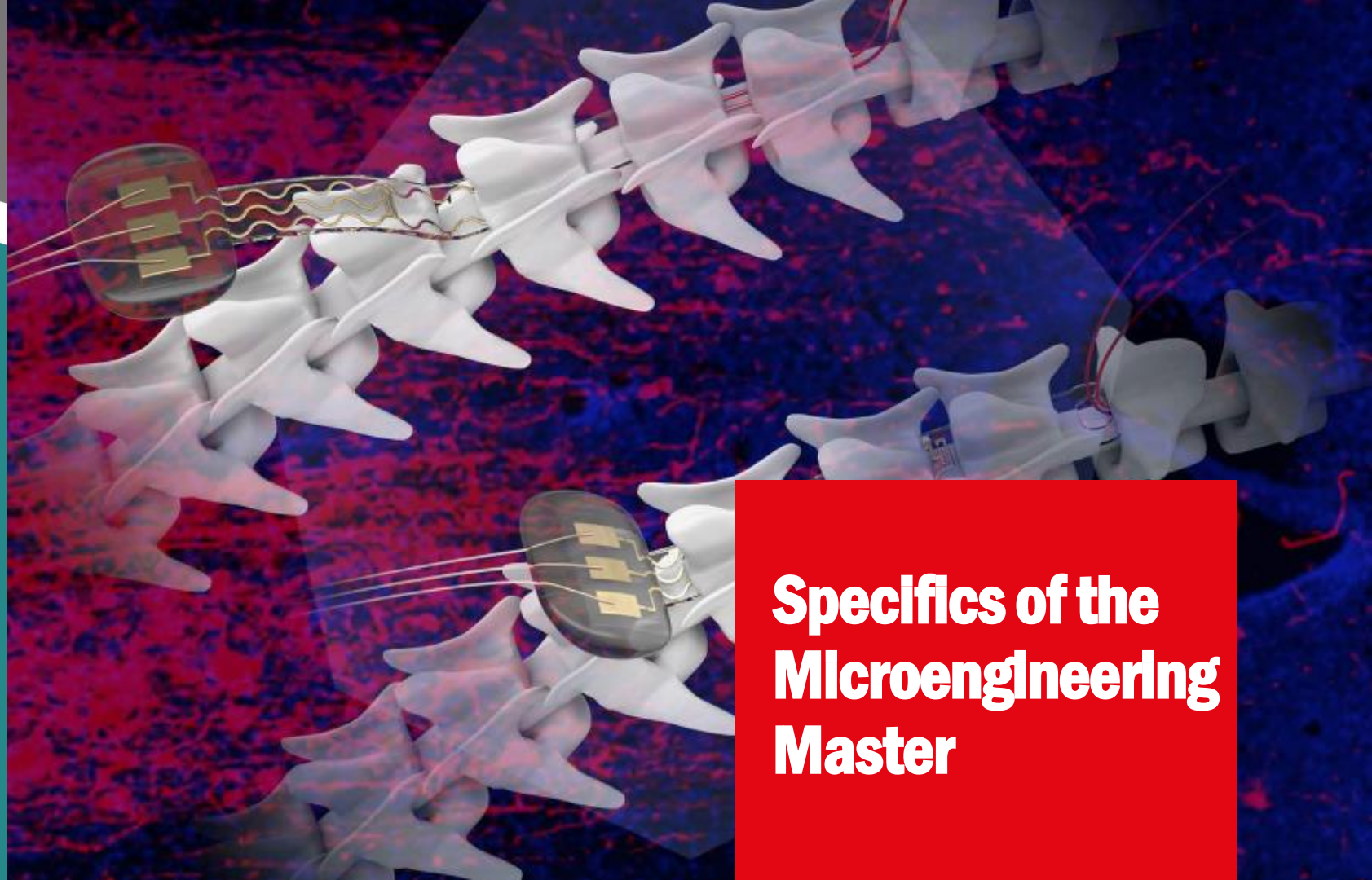
- Industrial
- Mobile
- Medical

Microengineering master



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

EPFL
mt
microtechnique
microengineering
section



Specifics of the Microengineering Master

Faculté des Sciences
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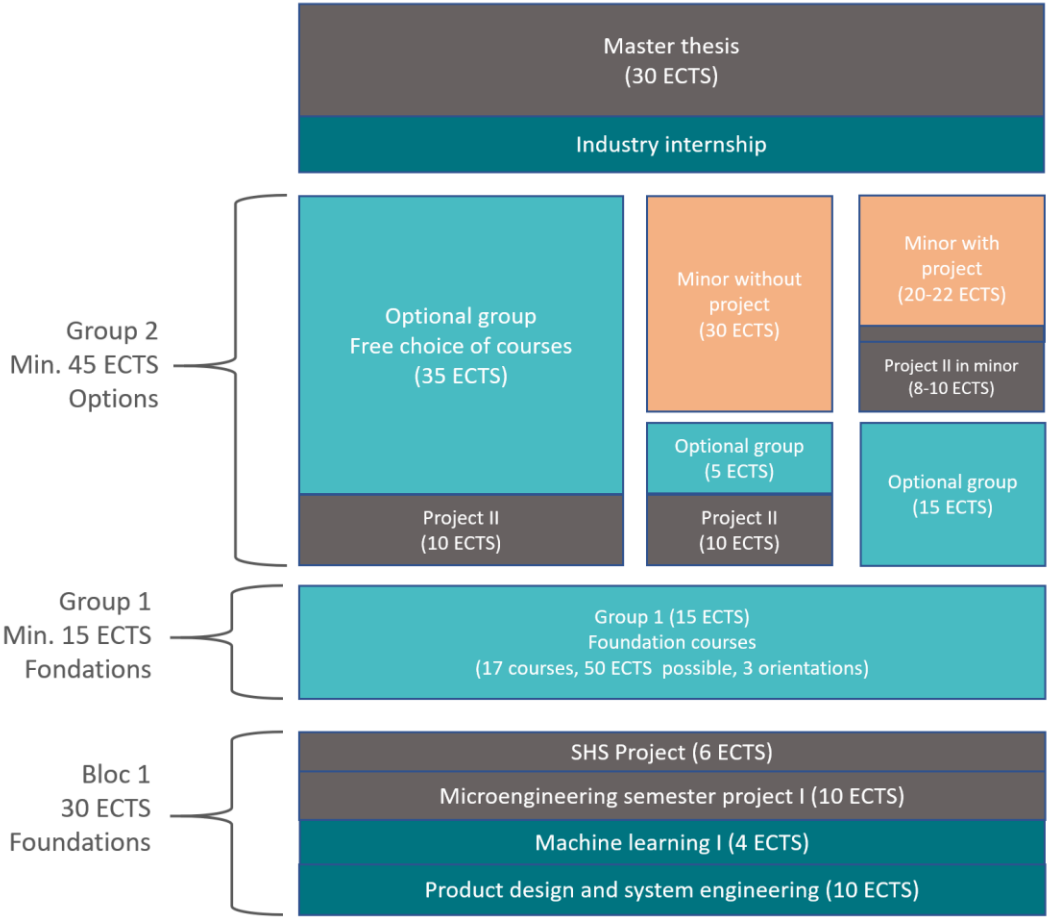
de l'Ingénieur (STI)

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

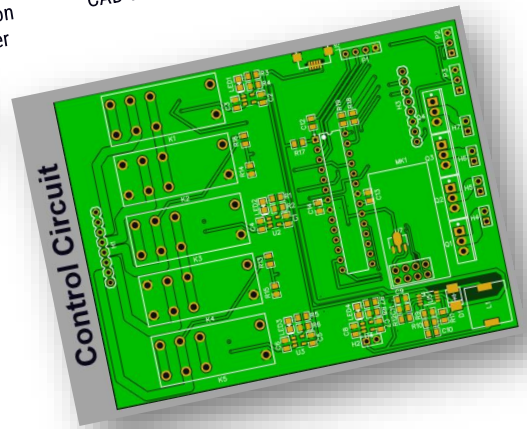
CAD designer

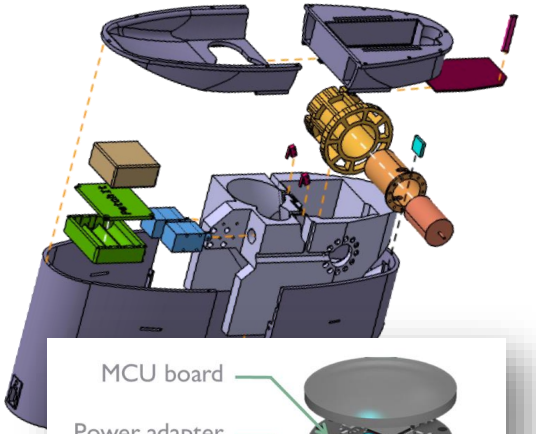
Hugo

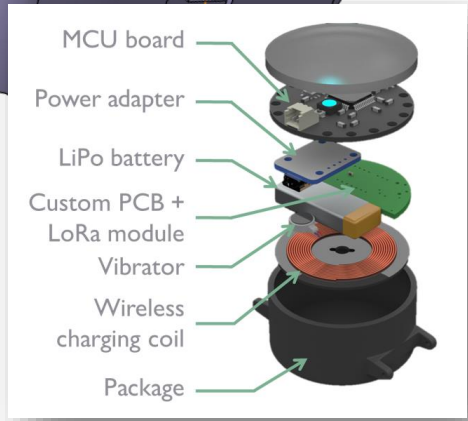
Programmer

Florian

Business developer



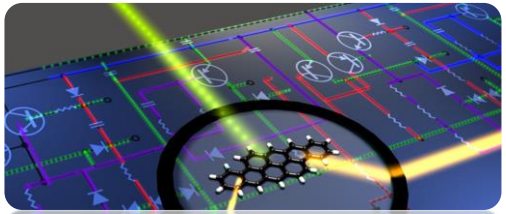


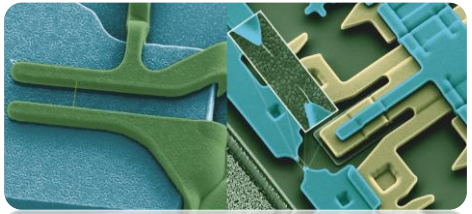


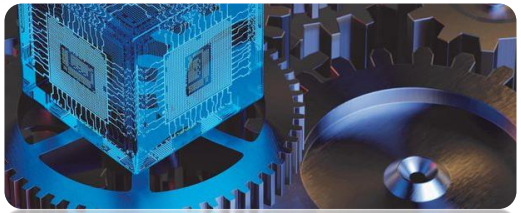
Orientations – Microengineering Master

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

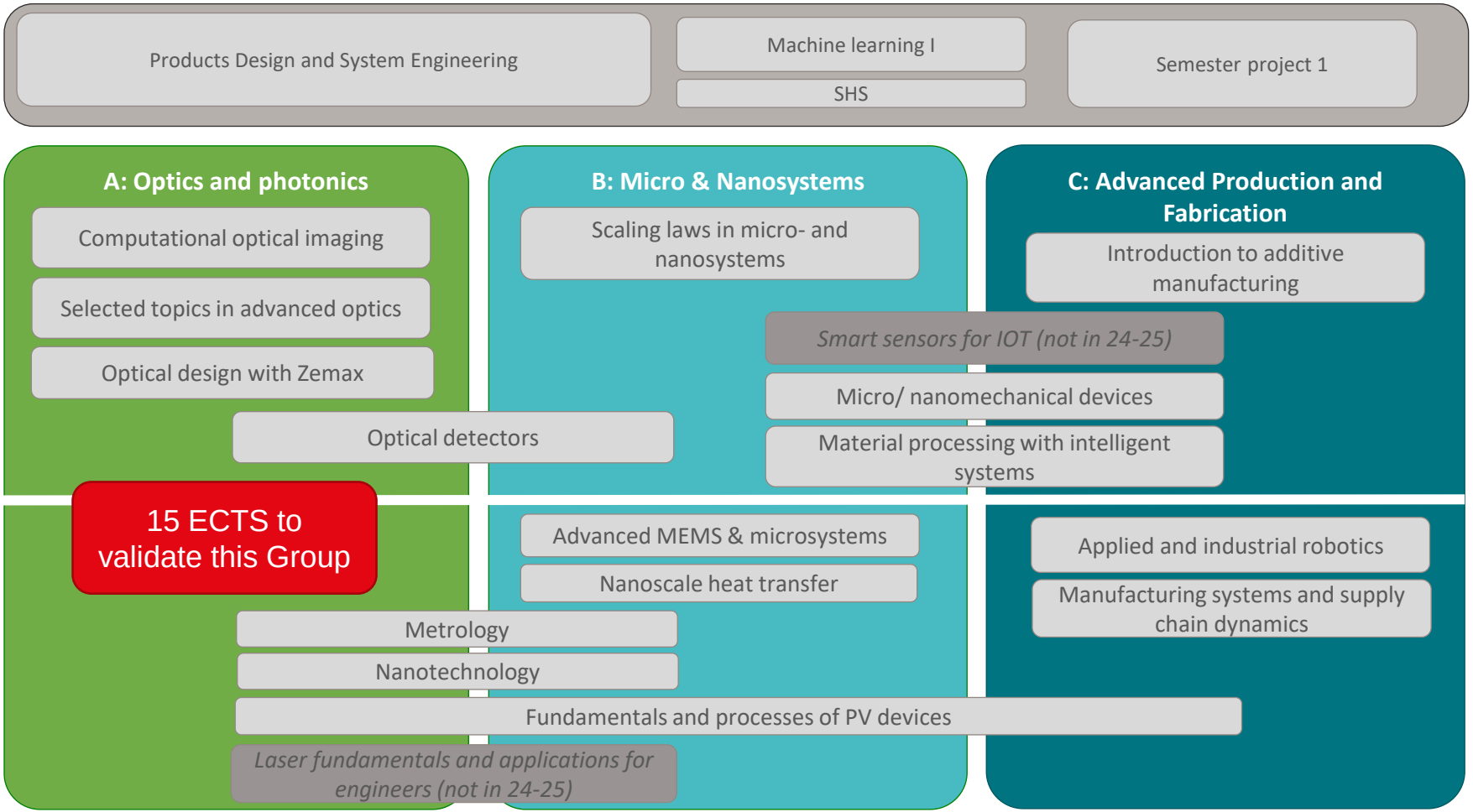
A Optics and Photonics	B Micro and Nanosystems	C Advanced manufacturing



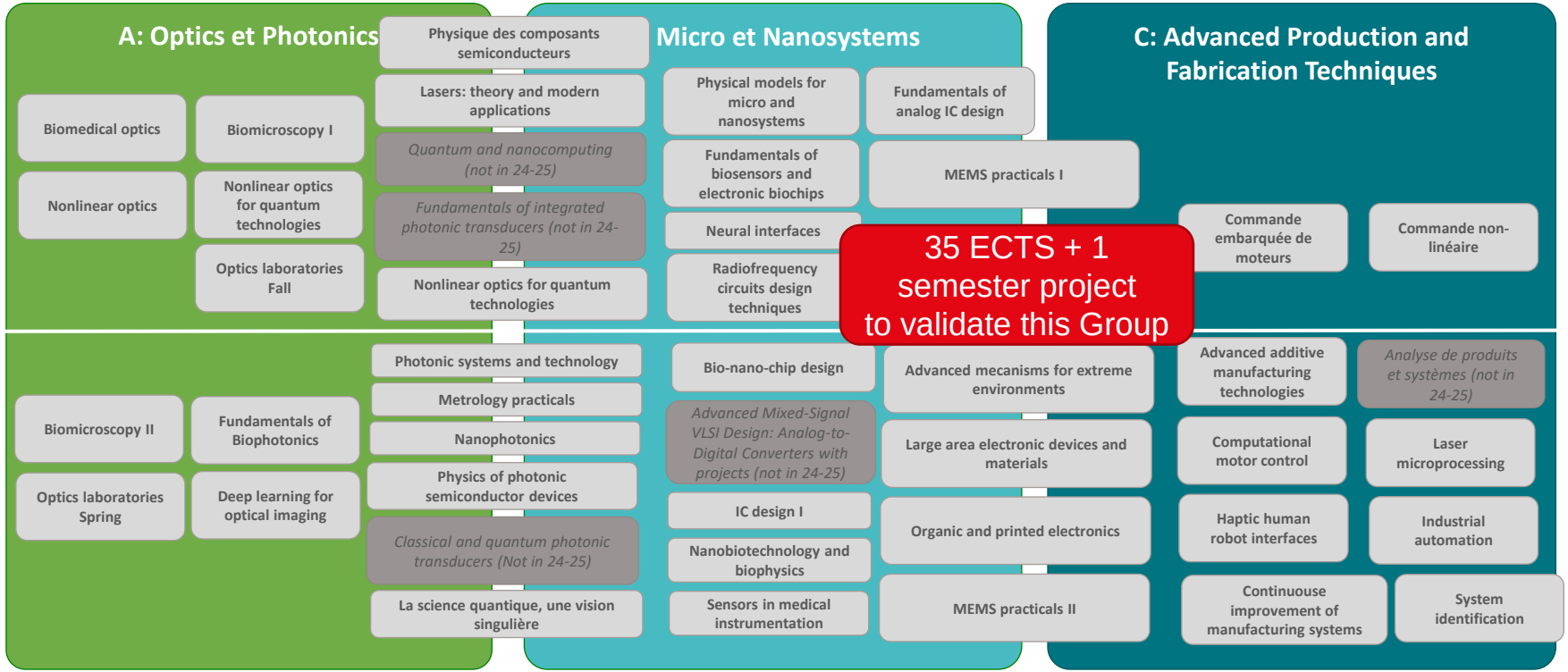




Orientations - Master Microengineering



Orientations - Master Microengineering



And more ...

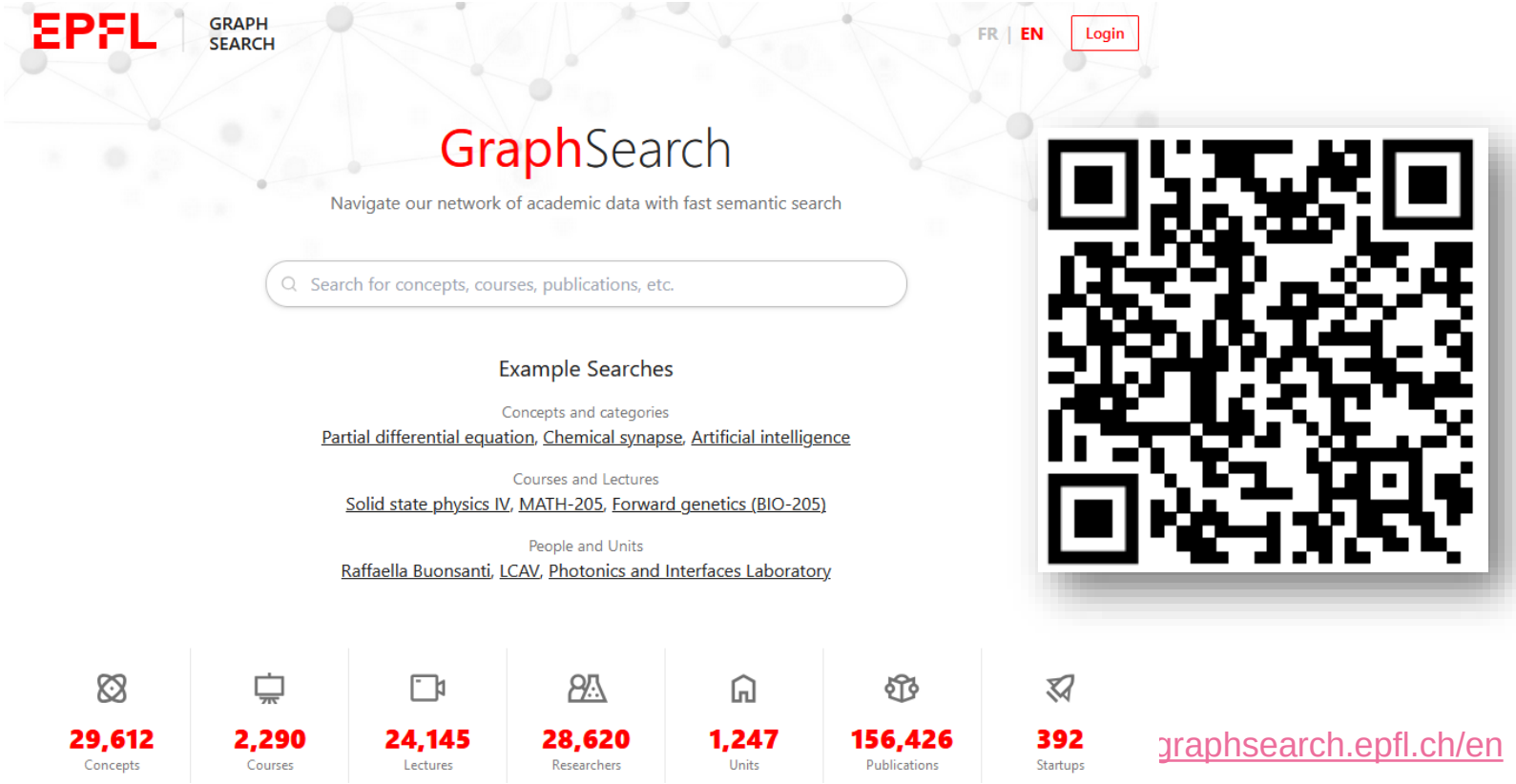
AI / ML
- Software architecture
- Machine learning II
- Machine learning programming:
- Distributed intelligent systems
- Model predictive control
- Advanced control systems

Signals & Bio
- Image processing I
- Image processing II
- Bio-image informatic, Audio
- Neural signal and signal processing
- Translational neuroengineering
- Applied biomedical signal processing
- Introduction to Bioengineering

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

Robotics
- Basics of mobile robotics
- Legged robots
- Aerial robotics
- Evolutionary robotics
- Intercultural presentation skills

Graph Search EPFL, Your personalized EPFL Chatbot Use-it !



graphsearch.epfl.ch/en

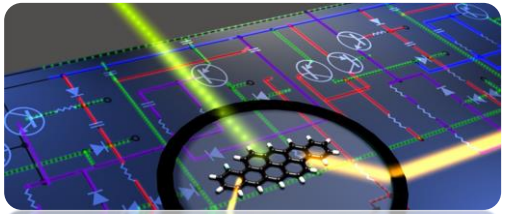
Your study advisors for MT orientations

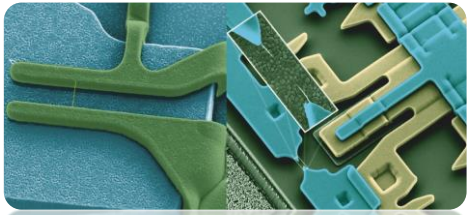
Olivier Martin
Study advisor

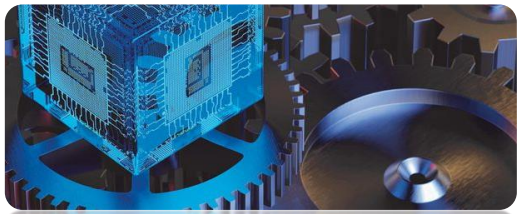
Giovanni Boero
Study advisor

Yves Bellouard
Study advisor

A	B	C
Optics and Photonics	Micro and Nanosystems	Advanced production and fabrication techniques

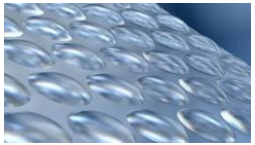




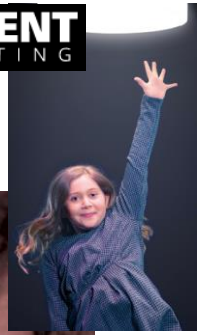


EPFL mt microtechnique microengineering section

Imaging

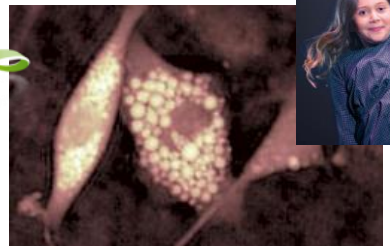


REGENT LIGHTING



FOCUSLIGHT Never stop exploring

lyncée tec



NanoLive Looking inside life

photon focus

Smart fabric printing

SEFAR

FISBA Innovators in Photonics

Example of Industry Players **Optics & Photonics**

TRUMPF

SYNOVA

SCHNYDER GEAR CUTTING SOLUTIONS

OVD KINEGRAM a KURZ company

teltec systems ag

COHERENT

LUMENTUM

Marking & security

Lasers and communications

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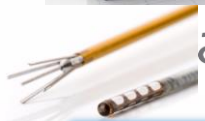
Microfab, MEMS, Sensors and Packaging

SUSS MicroOptics

csem

ASML

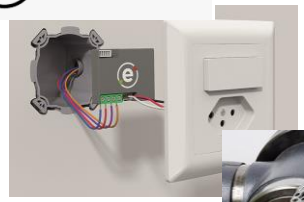
life.augmented



aleva NEUROTHERAPEUTICS

Systems Engineering

esmart



TESA TECHNOLOGY

Lambda Health System

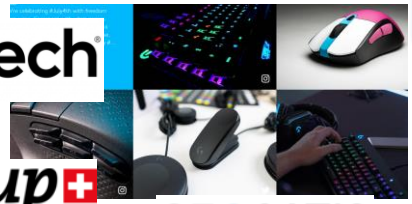
EMS ELECTRO MEDICAL SYSTEMS

insolight

Example of Industry Players **Micro & Nanosystems**

Sensors, Wireless and IOT

logitech



Gaitup

GEOSATIS securing people

Watchmaking

BVLGARI

ROLEX

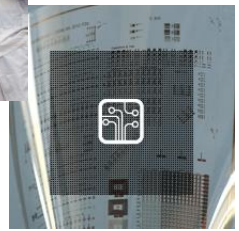
EPFL mt microtechnique microengineering section

Advanced manufacturing

BÜHLER

+GF+ GF Machining Solutions

posalux



FEMTOprint

Readily3D

Research centers

csem

EMPA

Cartier

Nestlé NESPRESSO

ROLEX

ABB

BOBST

MIKRON

Example of Industry players
Advanced production and fabrication techniques

ETEL

Supply chain

DEMAUREX

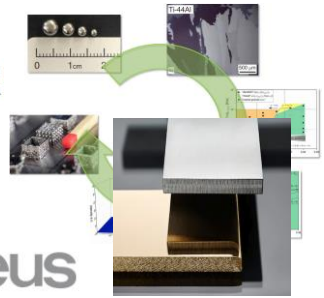
AICA

Asycube
Flexible feeders

asyril

Industrial robotics

VARINOR MATÉRIAUX



PX GROUP

Heraeus

Materials processing

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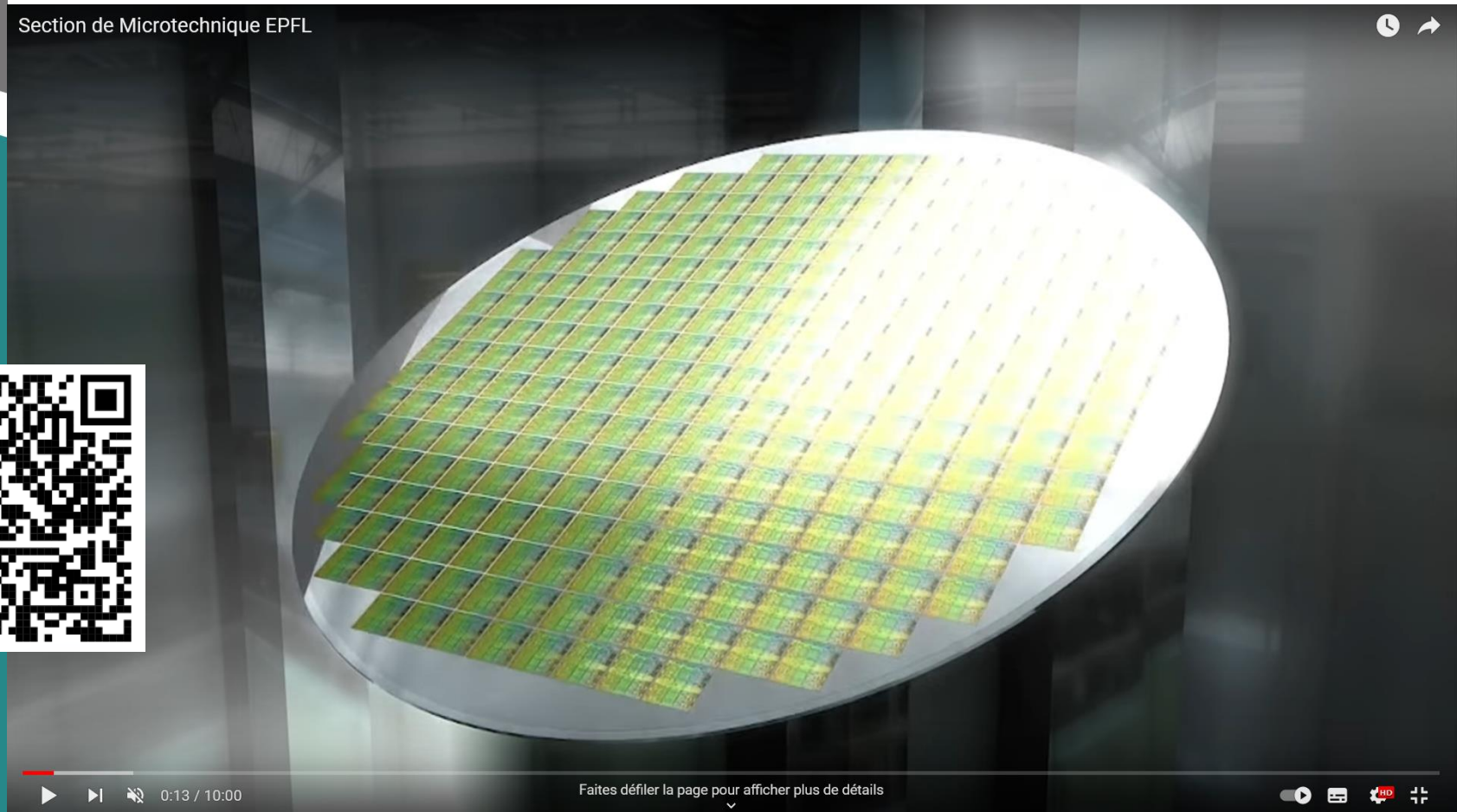
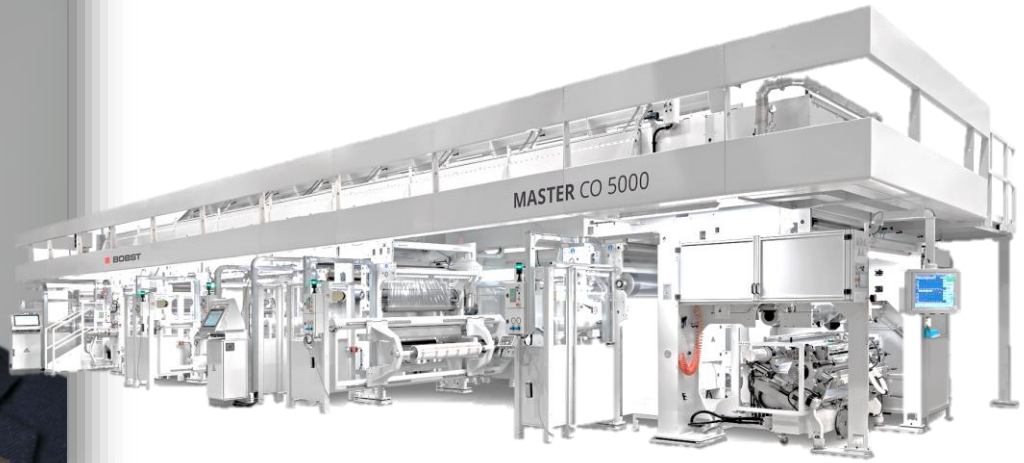
microtechnique
microengineering
section

Short Movie to learn more



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

Alumni Testimonies



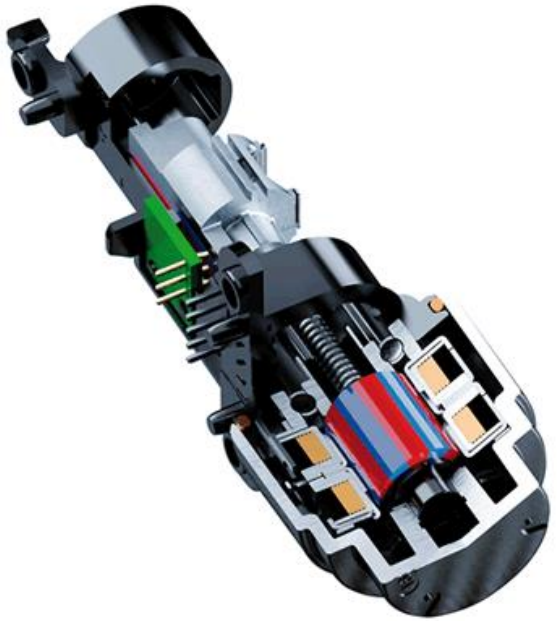
Léonard Badet
Head of Group Technology – Bobst
Master Microtechnique in 2017

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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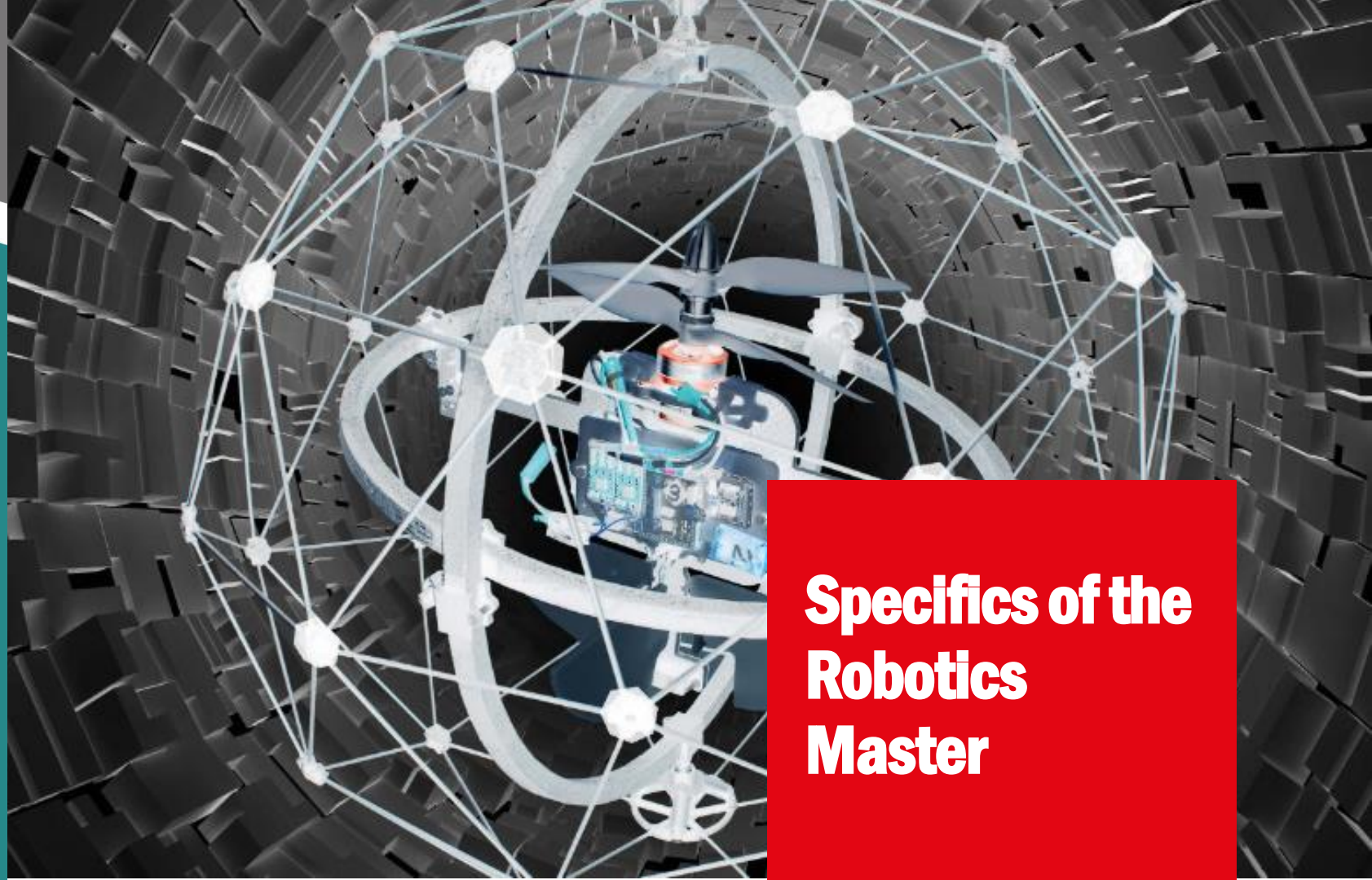
microengineering
section



Specifics of the Robotics Master

Faculté des Sciences
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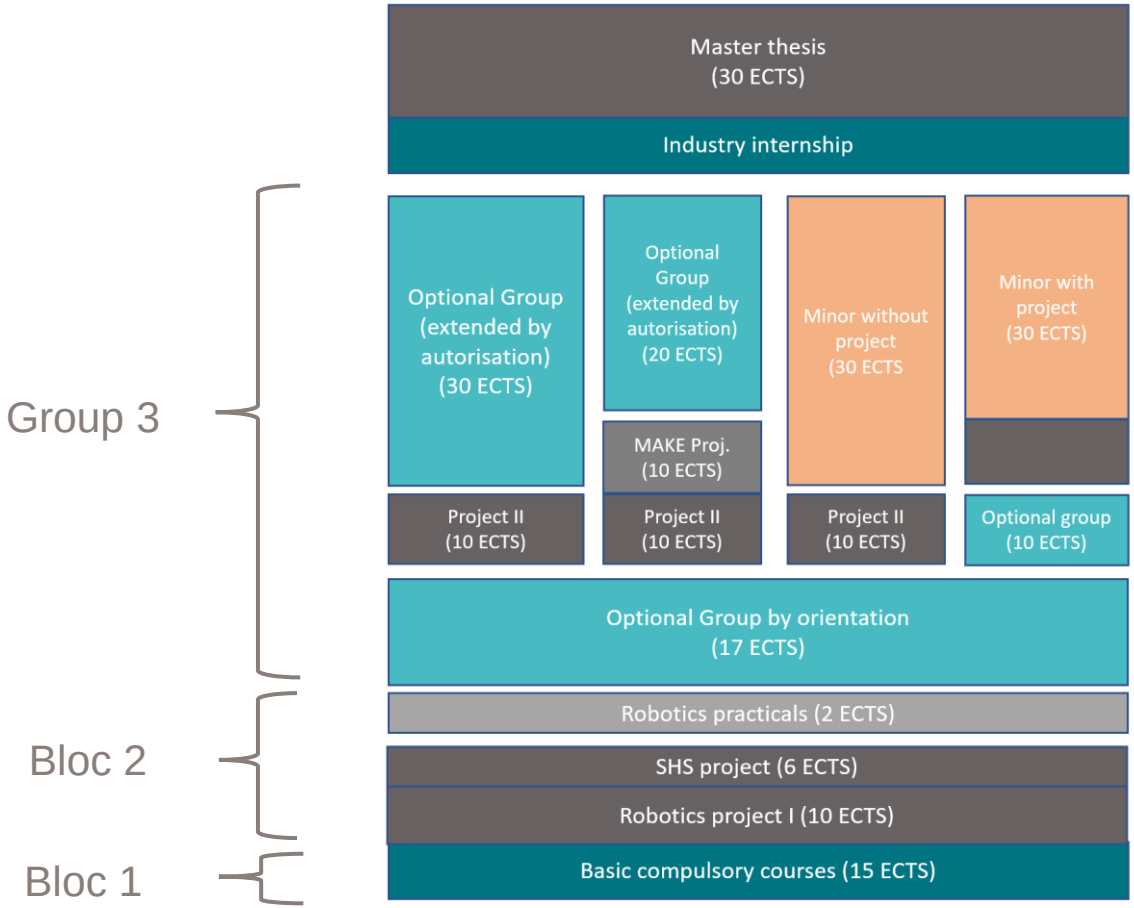
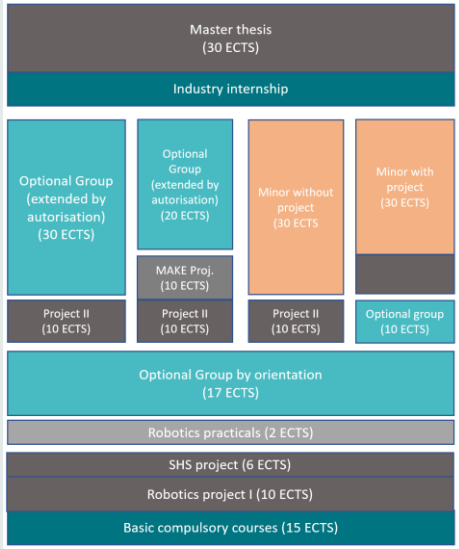
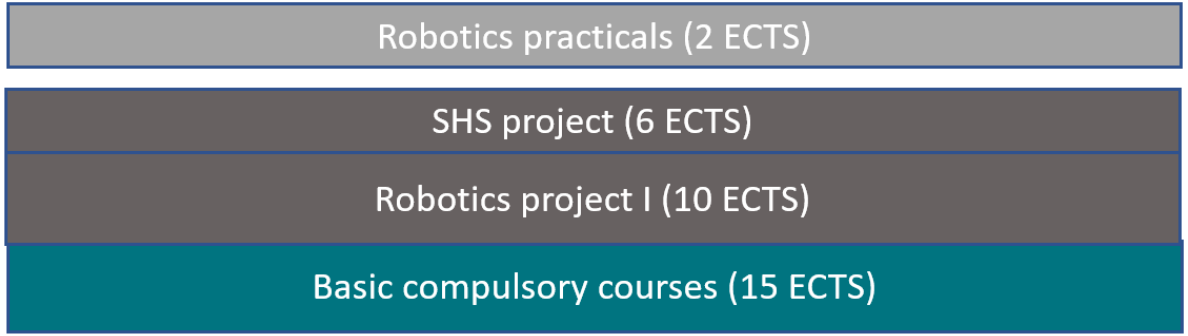
de l'Ingénieur (STI)

Master Program structure



Structure


Master thesis
(30 ECTS)
Industry internship
Optional Group (extended by autorisation) (30 ECTS)
Optional Group (extended by autorisation) (20 ECTS)
Minor without project (30 ECTS
Minor with project (30 ECTS)
MAKE Proj. (10 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 :

- Machine learning I (4 ECTS; Billard) – fall
- Model Predictive Control (4 ECTS; Jones) – fall

Practicals:

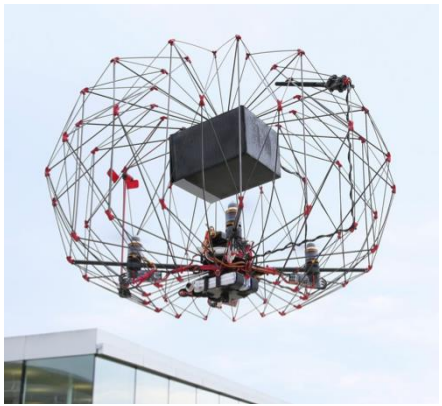
- Robotics Practicals (2 ECTS; Mondada + all) - spring

Orientations

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

Industrial Robotics

Medical Robotics

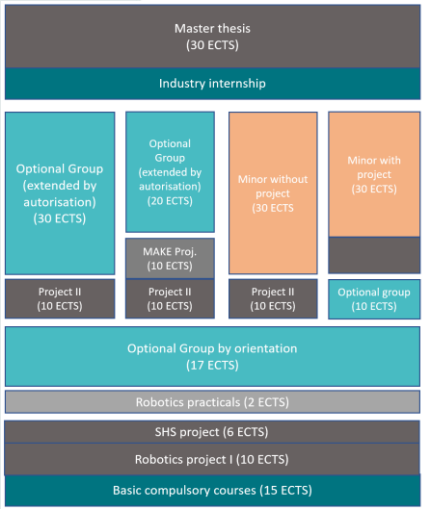


Mobile robotics

Orientations

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

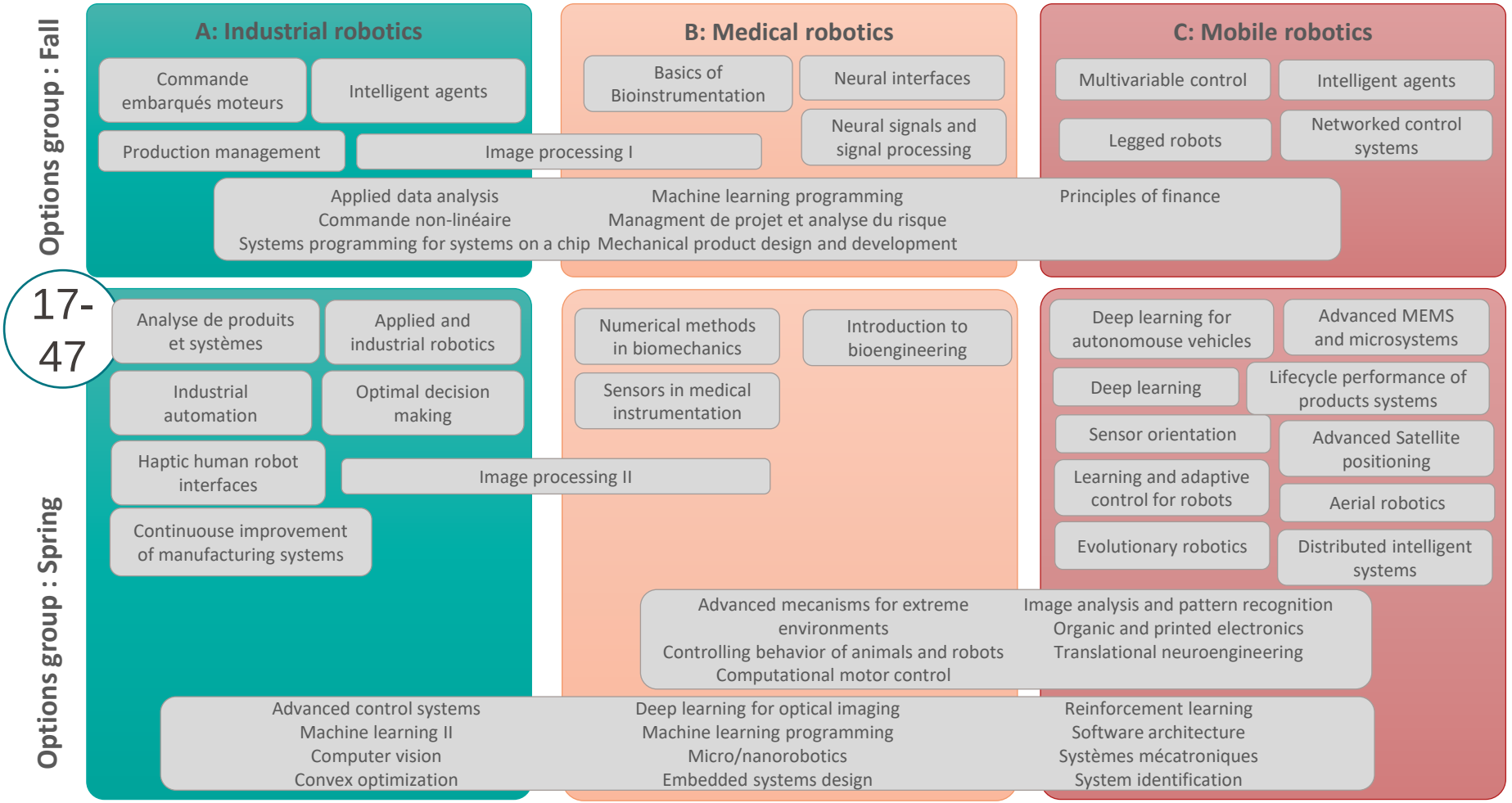
A Industrial robotics
B Medical robotics
C Mobile robotics



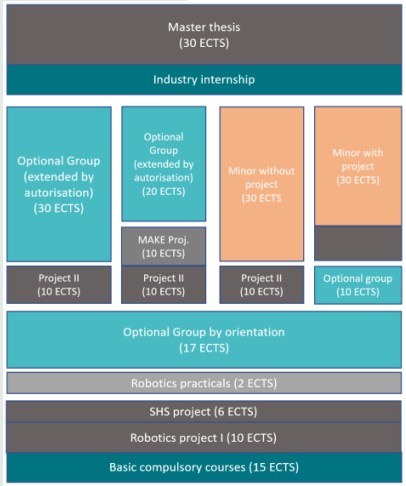
Groupe à options
Grand choix de cours
(17 ECTS)

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 positionning			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
				4
				3
				2
				5
				3
				4
				3
				3
				4
				2
				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

Master in Robotics - Orientations

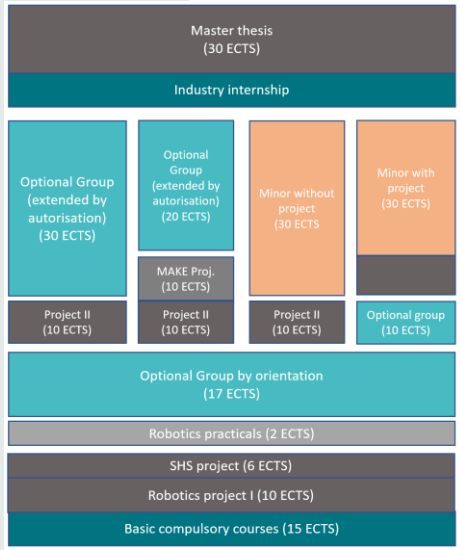


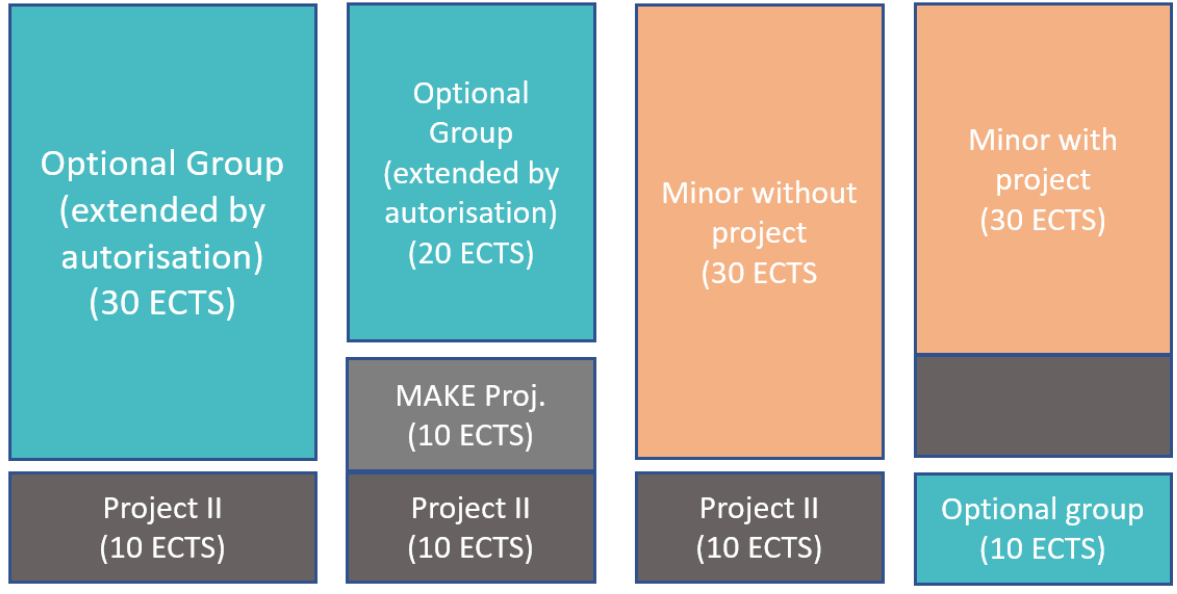
Orientation courses examples



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-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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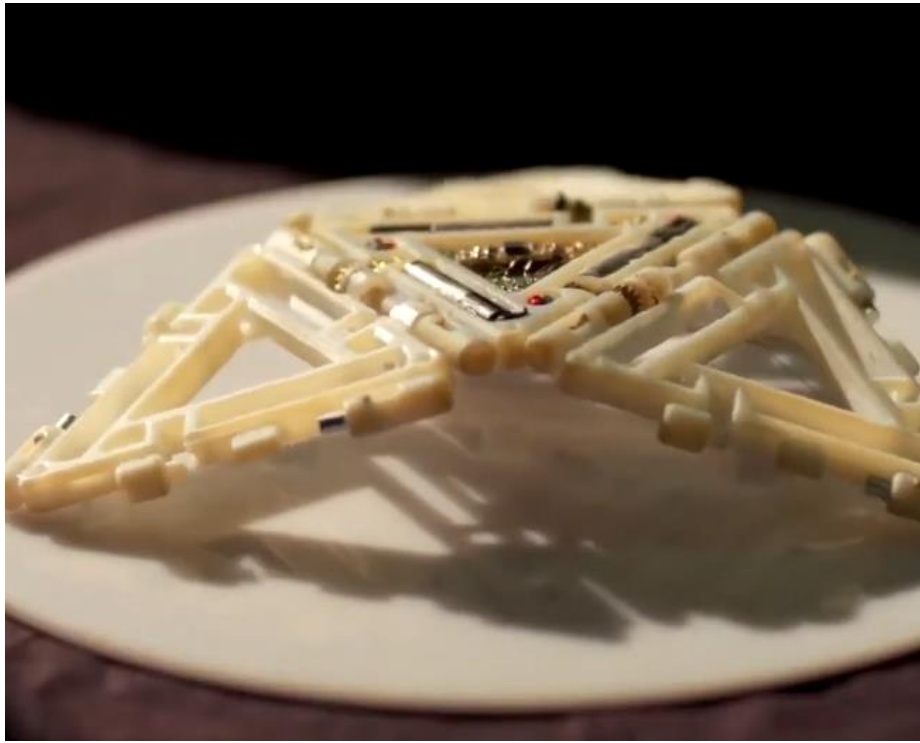
et Techniques
de l'Ingénieur (STI)

Student Testimony

Sébastien de Rivaz
about the Robotics Master

Student Testimony

Arwen Blanche Giraud
about the Robotics Master



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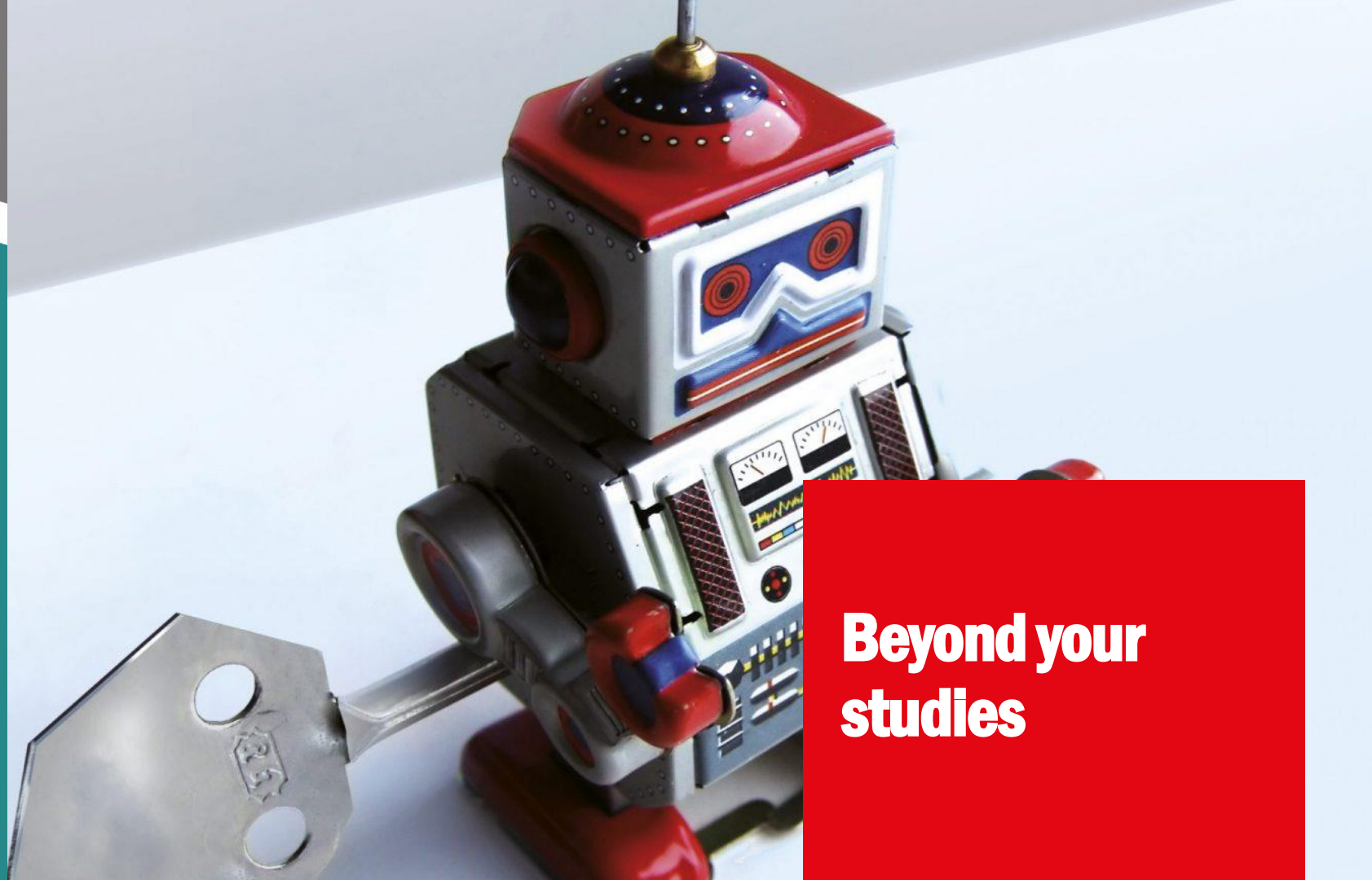

Beyond your studies

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

MAKE Projects: Fantastic team effort

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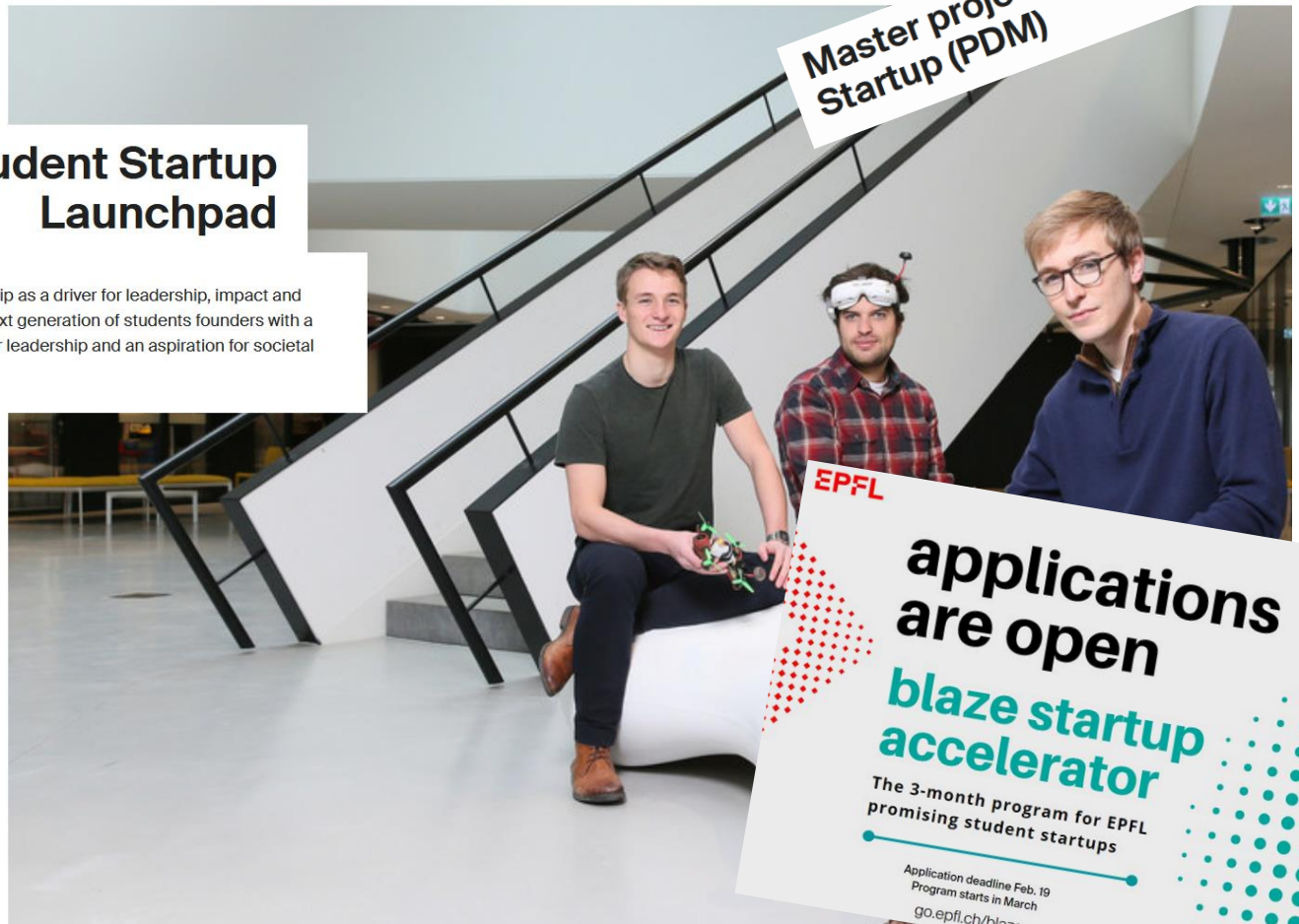
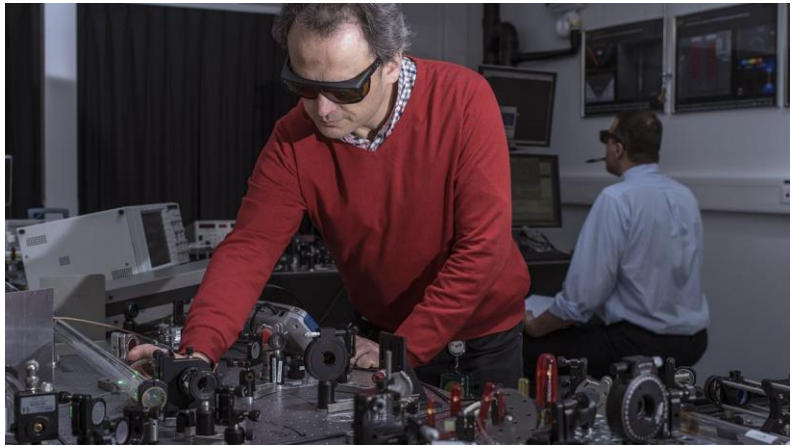
Entrepreneurship !

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
  - Indicative: week 5
  - In depth: 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

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EPFL student services

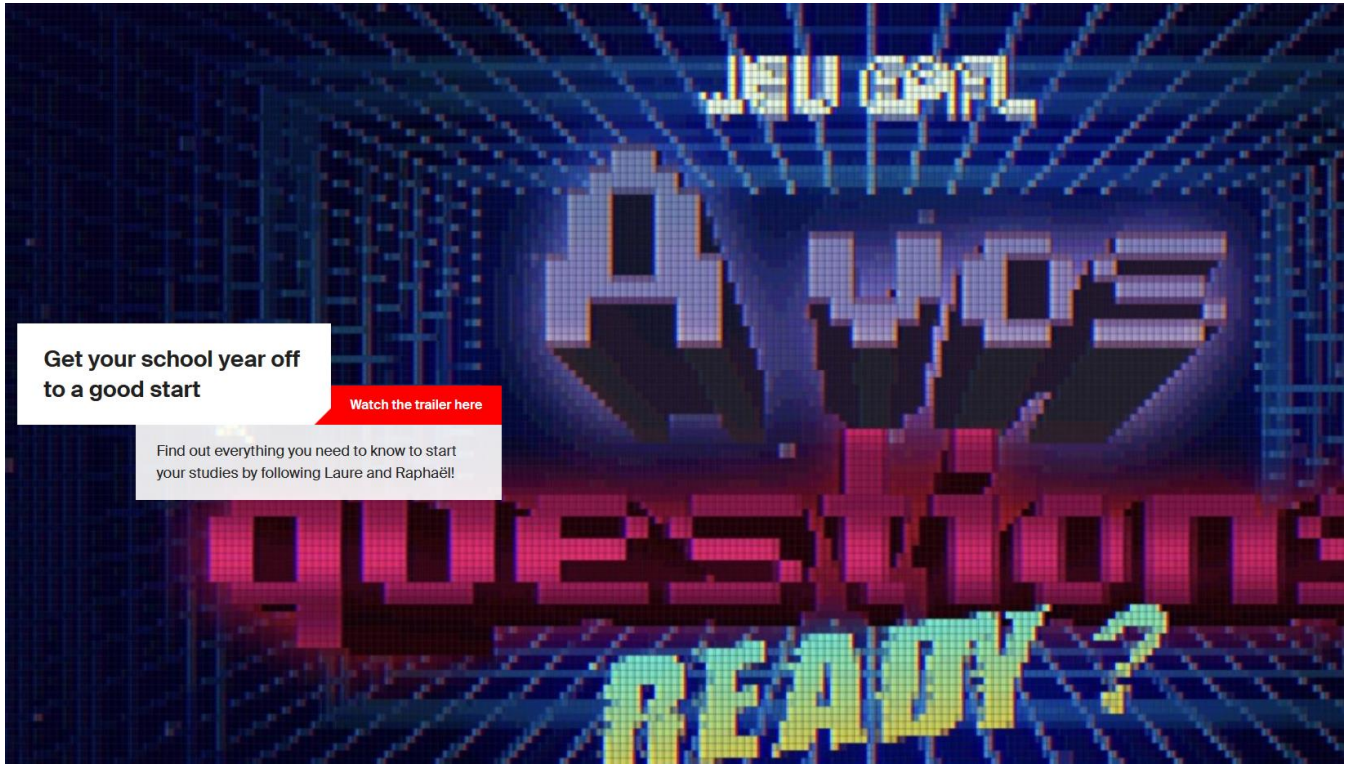
The EPFL “Student Services” desk is the main contact point for all academic queries

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 …

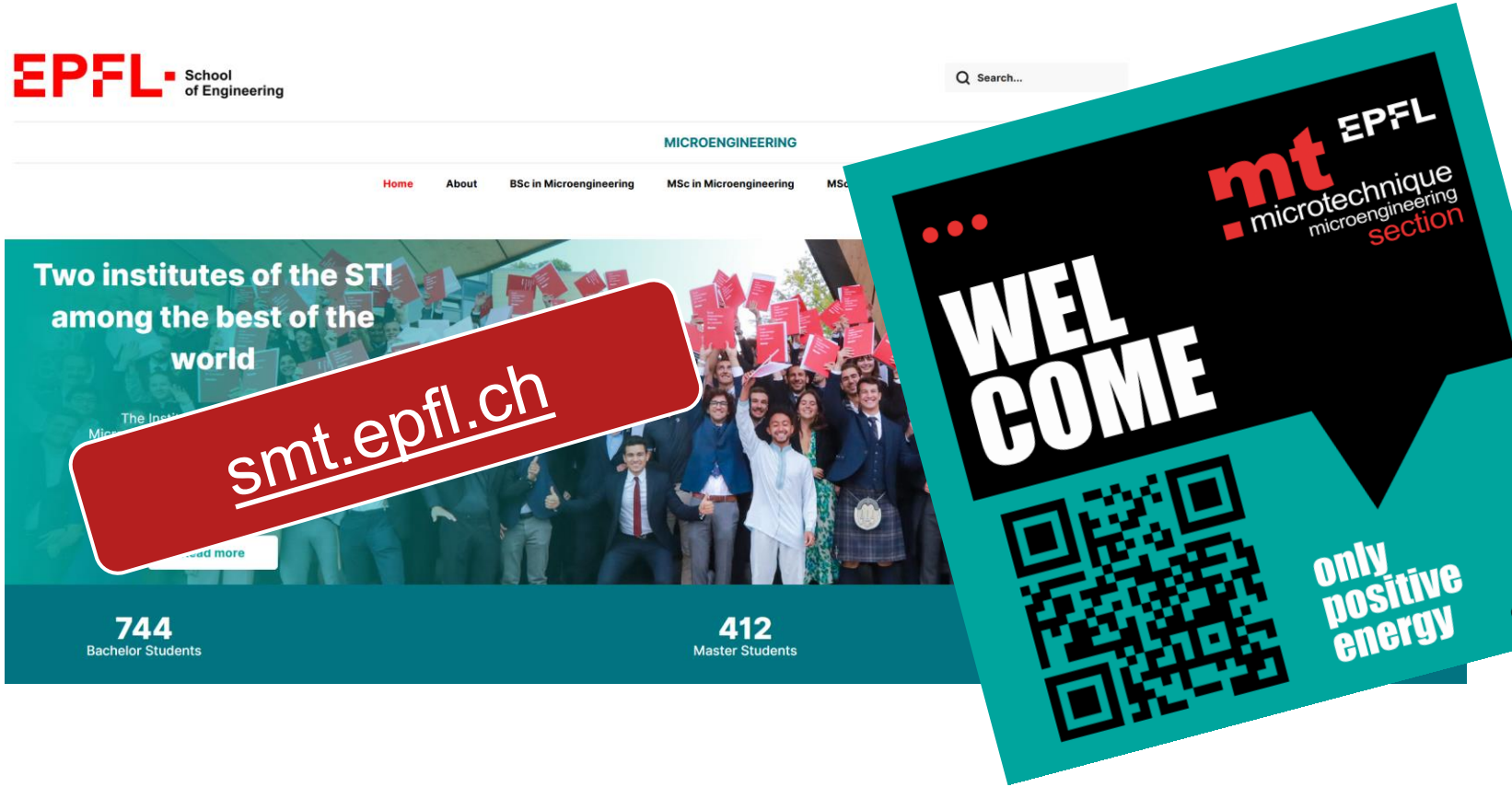
Detailed FAQ
Microengineering
Robotics

FAQ

- …ntly Asked Questions among Microengineering Master students
- Courses
- Choice of minor
- Industry internship
- Semester (PdS) projects
- Master project
- Study trip during the master
- Graduation ceremony and prizes

https://sti.epfl.ch/smt/faq/

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 appointment:**

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

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