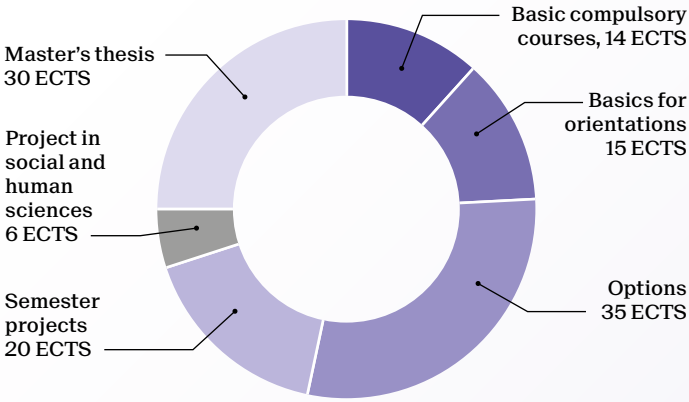


# Master of Science in MICROENGINEERING

2-year program - 120 ECTS



## Industrial internship

The program includes a compulsory 8-week internship which can be extended to 6 months and/or combined with the Master's thesis.

Students may organize their study plan around one of the following orientation:

- Optics and photonics
- Micro and nanosystems
- Production and advanced manufacturing

They may choose a 30 ECTS minor within the optional courses. Recommended minors with this program:

- Biomedical technologies
- Imaging
- Photonics

## Admission criteria

EPFL Bachelor's degree in Microengineering.

A Bachelor's degree in Computer Science, Electrical Engineering, Mechanical Engineering, or any related field with an interdisciplinary background and an excellent academic record may also be accepted. However, candidates must master at least two of the three leading fields: computer science, electronics, and mechanical engineering. Additional credits to fill any gaps may be required.

## Career prospects

The EPFL MSc in Microengineering opens a broad range of career opportunities in research departments and manufacturing units over the entire industry spectrum, from start-ups to multinational groups. Microengineers are highly sought after in high-tech sectors, where their solid and broad profile empowers them to lead research and development, as well as to oversee production in industries ranging from aerospace and medtech to the watch industry.

School of Engineering  
[go.epfl.ch/master-microengineering](http://go.epfl.ch/master-microengineering)  
 contact: [smt@epfl.ch](mailto:smt@epfl.ch)

	Credits
<b>Basic compulsory courses</b>	<b>14</b>
Products design and systems engineering	10
Machine learning I	4

Basics for orientations	A	B	C	15
Advanced MEMS and microsystems		B		3
Applied and industrial robotics			C	2
Computational optical imaging	A			3
Fundamentals and processes for photovoltaic devices	A	B	C	3
Introduction to additive manufacturing			C	3
Laser fundamentals and applications for engineers	A	B		3
Manufacturing systems and supply chain dynamics			C	3
Materials processing with intelligent systems			C	3
Metrology	A	B		3
Micro/Nanomechanical devices		B	C	4
Nano-scale heat transfer		B		4
Nanotechnology	A	B		3
Optical design with ZEMAX	A			3
Optical detectors	A	B		3
Scaling laws in micro and nanosystems		B		2
Selected topics in advanced optics	A			3
Smart sensors for IoT		B	C	3

Options				35
Advanced A/MS VLSI: A-to-D Converter		B		3
Advanced additive manufacturing technologies			C	4
Advanced analog integrated circuit design		B	C	3
Advanced control systems			C	3
Aerial robotics				4
Analog IC design		B		4
Analyse de produits et systèmes			C	2
Applied biomedical signal processing				4
Architecture software				3
Audio				4
Basics of mobile robotics				4
Bioimage informatics				4
Biomedical optics	A			3
Biomicroscopy I,II	A			8
Bio-nano-chip design		B		4
Classical and quantum photonic transducers	A	B		3
Commande embarquée de moteurs			C	3
Commande non linéaire			C	3
Computational motor control			C	4
Continuous improvement of manufacturing systems			C	5
Deep learning for optical imaging	A			3
Distributed intelligent systems				5
Energy supply, economics and transition	A	B	C	2
Evolutionary robotics				3
Fundamentals of analog VLSI design		B		4
Fundamentals of biophotonics	A			3
Fundamentals of biosensors and electronic biochips		B		3
Fundamentals of integrated photonic components	A	B		4
Haptic human robot interfaces			C	3
Image processing I, II				6
Industrial automation			C	3
Intercultural presentation skills				2
Introduction to bioengineering				3
Lab on app development for tablets and smartphones				4
Large-area electronics: devices and materials		B	C	3
La science quantique : une vision singulière	A	B		3
Laser microprocessing			C	2
Lasers: theory and modern applications	A	B		4
Legged robots				4
Machine learning programming				2
Machine learning II	A	B	C	4
Management de projet et analyse du risque				4
Mécanismes avancés pour environnements extrêmes		B	C	3
MEMS practicals I, II		B	C	4
Metrology practicals	A	B		2
Model predictive control				4
Nanobiotechnology		B		3
Nanophotonics	A	B		3
Neural interfaces		B		6
Neural signals and signal processing				6
Nonlinear optics	A			4
Nonlinear optics for quantum technologies	A			4
Optics laboratories (autumn / spring)	A			6
Organic and printed electronics		B	C	2
Photonic systems and technology	A	B		4
Physical models for micro and nanosystems		B		2
Physics of photonic semiconductor devices	A	B		4
Physique des composants semiconducteurs	A	B		3
Quantitative imaging for engineers	A		C	3
Quantum and nanocomputing	A	B		6
Radio frequency circuits design techniques		B		4
Sensors in medical instrumentation		B		3
System identification			C	3
Systems engineering				3
System programming for Systems-on-chip				6
Translational neuroengineering				6