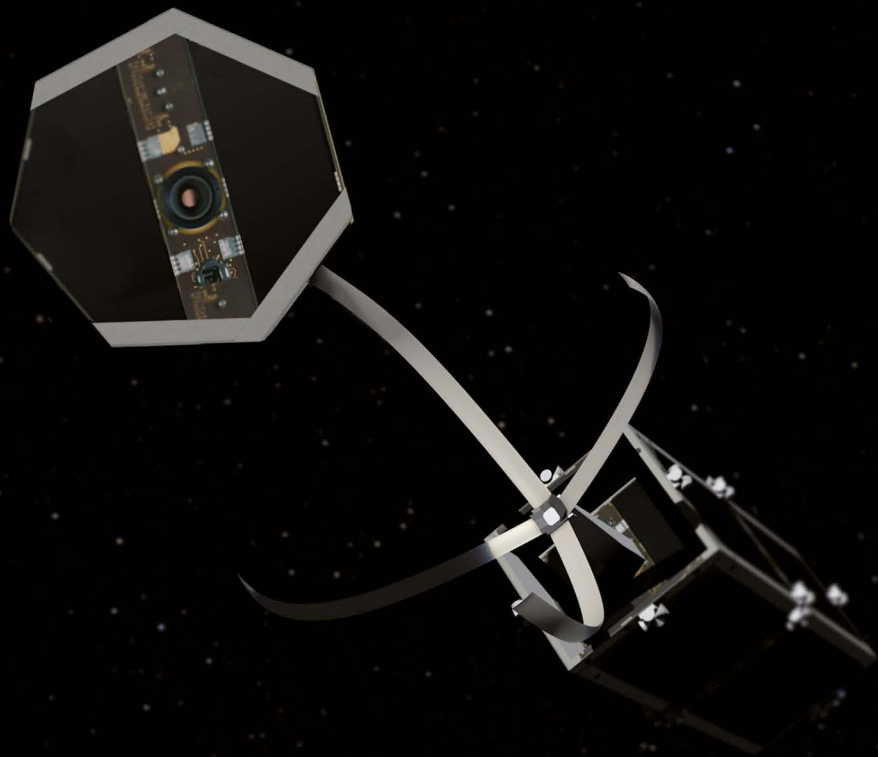


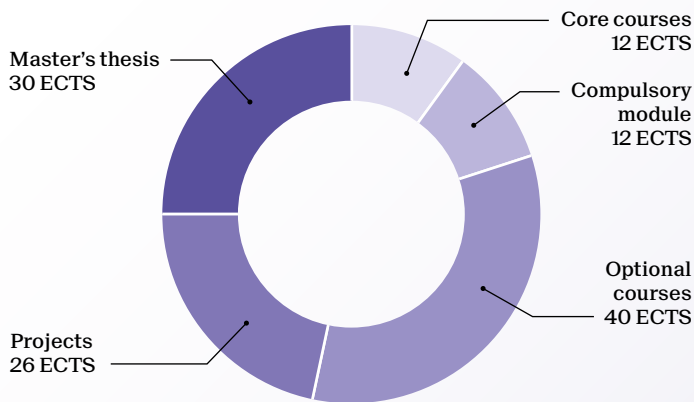
MICROENGINEERING

MASTER



Master of Science in MICROENGINEERING

2-year program - 120 ECTS



Possible Minors:

- Biomedical Technologies
- Computational Science & Engineering
- Energy
- Management, Technology and Entrepreneurship
- Science, Technology and Area Studies
- Space Technologies

Possible Specializations:

- A Optical Engineering
- B Micro- and Nanosystems
- C Robotics

Industrial internship

The program includes a minimum 8-week long compulsory internship.

	Track	Credits
Core courses:		12
Product design: managing projects and innovations		3
Product design in a team		5
Systems engineering		4
Compulsory module		12
Optical Engineering	A	12
Image optics		3
Optical Detectors		3
Optics laboratories		3
Selected topics in advanced optics		3
Micro- and Nanosystems	B	12
Advanced MEMS		3
Materials & Technology of microfabrication		3
Modeling and simulation of microsystems		3
Nanotechnology		3
Robotics	C	12
Applied machine learning		4
Mobile robots		4
Robotics practicals		2
Robotique industrielle et appliquée		2

	Track	Credits
Optional courses according to compulsory module	minimum of 10 credits	10
Advanced MEMS	A B C	3
Applied machine learning	A B C	4
Bases de la robotique	A B C	3
BioMEMS	A B C	2
Flexible bioelectronics	A B C	3
Image optics	B C	3
Image processing I, II	A B C	6
Materials & Technology of microfabrication	A B C	3
Microelectronics	A B C	2
Mobile robots	A B C	4
Modeling and simulation of microsystems	A C	3
Nanotechnology	A C	3
Optical detectors	B C	3
Robotique industrielle et appliquée	A B	2
Scaling laws in micro- and nanosystems	A B C	2
Selected topics in advanced photonics	B C	3
Stochastic methods	A B C	2
Techniques d'assemblage	A B C	3

Free optional courses				30
Advanced control systems	A	B	C	3
Advanced machine learning			C	4
Advanced satellite positioning			C	4
Analog circuit design I, II		B		4
Analyse de produits et systèmes		B		2
Audio	A	B	C	3
Biomedical optics	A			3
Biomicroscopy I, II	A			7
Circuits intégrés I		B		3
Commande d'actionneurs à l'aide d'un microprocesseur + TP			C	2
Commande non linéaire			C	3
Computational motor control			C	4
Computer-aided engineering			C	5
Distributed intelligent systems (pas donné 2016-17)		B	C	5
Evolutionary robotics			C	4
Fab/sim practicals		B		2
Fabrication assistée par ordinateur			C	5
Fundamentals and processes for photovoltaic devices	A	B	C	3
Fundamentals of biophotonics	A			3
Haptic human robot interfaces			C	3
Integrated optics	A			3
Large-area electronics: devices and materials	A	B	C	3
Laser microprocessing	A	B	C	2
Lasers : theory and modern applications				4
Machine learning programming	A		C	2
Model predictive control		B	C	3
Nano/Advanced MEMS practicals	A	B	C	2
Nanobiotechnology and biophysics	A	B		3
Optical communications	A			3
Opticalwave propagation	A			3
Optics laboratories II	A			3
Photomedicine	A			2
Photonic micro- and nanosystems	A	B		2
Photonic systems and technology	A			4
Physics of photonic semiconductor devices	A			4
Printed systems and large area manufacturing	A	B	C	2
Propagation of electromagnetic waves	A			2
Quantum electrodynamics and quantum optics	A			4
Quantum optics and quantum information	A			4
Sensors in medical instrumentation	A	B	C	3
Space mission design and operations		B	C	2
System identification			C	3
Transducteurs et entraînements intégrés			C	3

A Specialization in Track A, B or C is delivered if 30 ECTS are obtained within a track.

Projects				26
Projet microtechnique I, II				20
Project in human and social sciences				6

School of Engineering
master.epfl.ch/microengineering
 contact: guy.delacretaz@epfl.ch