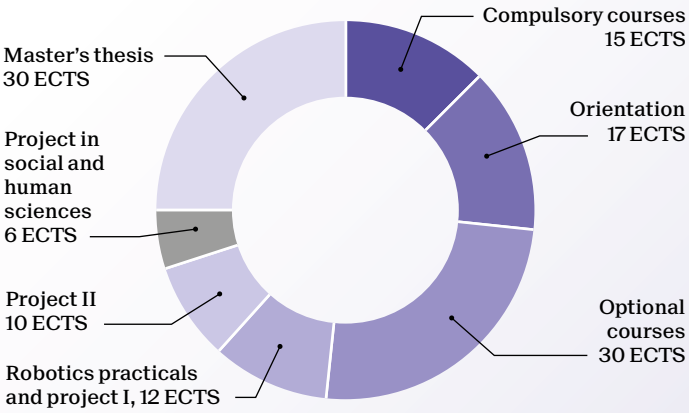
Master of Science in

ROBOTICS

2-year program - 120 ECTS



The program includes a compulsory industrial internship with a minimal duration of 8 weeks.

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

A Industrial robotics
B Medical robotics
C Mobile robotics

They may choose a minor instead of the optional courses (30 ECTS):

If the chosen minor includes a practical project, the Project II (10 ECTS) is completed by the minor's project and students can therefore choose 10 ECTS of optional courses.

Recommended minors with this program:

- Biomedical technologies
- Computer science
- Energy
- Engineering for sustainability
- Imaging
- Neuro-X
- Photonics
- Physics of living systems
- Quantum science and engineering
- Space technologies

Prerequisites for admission

Candidates holding an EPFL bachelor's degree in microengineering are automatically accepted. Holders of a bachelor's degree in computer science, electrical engineering, mechanical engineering, or any related field with an interdisciplinary background can apply and will go through the standard EPFL admission procedure.

School of Engineering
go.epfl.ch/master-robotics
contact: smt@epfl.ch

	Credits
Basic compulsory courses	**15**
Basics of mobile robotics	4
Basics of robotics for manipulation	3
Machine learning I	4
Model predictive control	4

	Orientations			
Optional courses and orientation	**A**	**B**	**C**	**47**
Advanced control systems	A	B	C	3
Advanced MEMS and microsystems			C	3
Aerial robotics			C	4
Analyse de produits et systèmes	A			2
Applied and industrial robotics	A			2
Applied data analysis	A	B	C	8
Architecture software	A	B	C	3
Basics in bioinstrumentation		B		4
Commande embarquée de moteurs	A			3
Commande non linéaire	A	B	C	3
Computational motor control		B	C	4
Computer vision	A	B	C	6
Continuous improvement of manufacturing systems	A			5
Controlling behavior in animals and robots		B	C	5
Convex optimization	A	B	C	5
Deep learning			C	4
Deep learning for autonomous vehicles			C	6
Deep learning for optical imaging	A	B	C	3
Distributed intelligent systems			C	5
Embedded system design	A	B	C	6
Energy supply, economics and transition	A	B	C	2
Evolutionary robotics			C	3
Haptic human robot interfaces	A			4
Image analysis and pattern recognition		B	C	4
Image processing I, II	A	B		6
Industrial automation	A			3
Intelligent agents	A		C	6
Interdisciplinary project				10
Introduction to bioengineering		B		3
Learning and adaptative control for robots			C	4
Legged robots			C	4
Lifecycle performance of product systems	A	B	C	3
Machine learning II	A	B	C	4
Machine learning for predictive maintenance applications	A			4
Machine learning programming	A	B	C	2
Management de projet et analyse de risque	A	B	C	4
Mathematics of data: from theory to computation	A	B	C	6
Mécanismes avancés pour environnements extrêmes		B	C	3
Mechanical product design and development	A	B	C	5
Micro- nano robotics	A	B	C	3
Multivariable control			C	4
Networked control systems			C	3
Neural interfaces		B		6
Neural signals and signal processing		B		6
Numerical methods in biomechanics		B		3
Optimal decision making	A			4
Organic and printed electronics		B	C	2
Principles of finance	A	B	C	5
Production management	A			5
Reinforcement learning	A	B	C	6
Sensor orientation			C	4
Sensors in medical instrumentation		B		3
System identification	A	B	C	3
System programming for Systems-on-chip	A	B	C	6
Translational neuroengineering		B	C	6