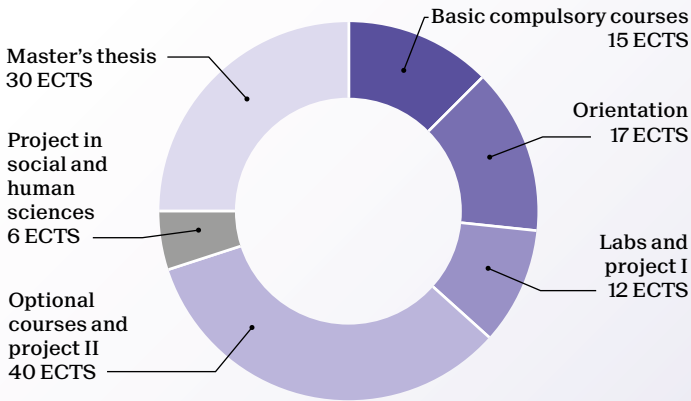


# Master of Science in ROBOTICS

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

The optional courses and project II (40 ECTS) include either:

Optional courses (30 ECTS) and 1 robotics project (10 ECTS)

OR

A minor (30 ECTS) with no practical project (Management, Technology and Entrepreneurship or Financial Engineering for example) and 1 robotics project (10 ECTS)

OR

A minor (30 ECTS) including a practical project and 10 ECTS of optional courses. Recommended minors with this program:

- Biomedical technologies
- Computer science
- Engineering for sustainability
- Neuroprosthetics
- Photonics
- 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](http://go.epfl.ch/master-robotics)  
 contact: [smt@epfl.ch](mailto:smt@epfl.ch)

	Credits
<b>Basic compulsory courses</b>	<b>15</b>
Applied machine learning	4
Basics of mobile robotics	4
Basics of robotics for manipulation	3
Model predictive control	4

	Orientations			
	A	B	C	
<b>Optional courses and orientation</b>				<b>57</b>
Advanced control systems	A	B	C	3
Advanced machine learning	A	B	C	4
Advanced MEMS and microsystems			C	3
Advanced satellite positioning			C	4
Aerial robotics			C	4
Analyse de produits et systèmes	A			2
Analysis and modeling of locomotion		B	C	4
Applied and industrial robotics	A			2
Biomaterials		B		4
Commande embarquée de moteurs	A			3
Computational motor control		B	C	4
Computer vision	A	B	C	4
Continuous improvement of manufacturing systems	A			4
Controlling behavior in animal and robots		B	C	4
Deep learning			C	4
Deep learning for autonomous vehicles			C	6
Deep learning for optical imaging	A	B	C	2
Distributed intelligent systems			C	5
Embedded systems	A	B	C	4
Evolutionary robotics			C	3
Flexible bioelectronics		B		4
Fundamentals of computer aided manufacturing	A			5
Fundamentals of neuroengineering		B	C	4
Haptic human robot interfaces	A			3
Image analysis and pattern recognition		B	C	4
Image processing I, II		B		6
Industrial automation	A			3
Intelligent agents	A		C	6
Interdisciplinary project	A	B	C	10
Learning and adaptative control for robots			C	4
Legged robots			C	3
Lifecycle performance of product systems	A			2
Machine learning programming	A	B	C	2
Mechanical product design and development	A	B	C	5
Multivariable control and coordination systems			C	4
Networked control systems			C	3
Numerical methods in biomechanics		B		3
Optimal decision making	A			4
Organic and printed electronics		B	C	2
Production management	A			5
Real-time embedded systems	A	B	C	4
Sensor orientation			C	4
Sensorimotor neuroprosthetics		B		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

<b>Labs and project I</b>	<b>12</b>
Robotics practical	2
Robotics project I	10