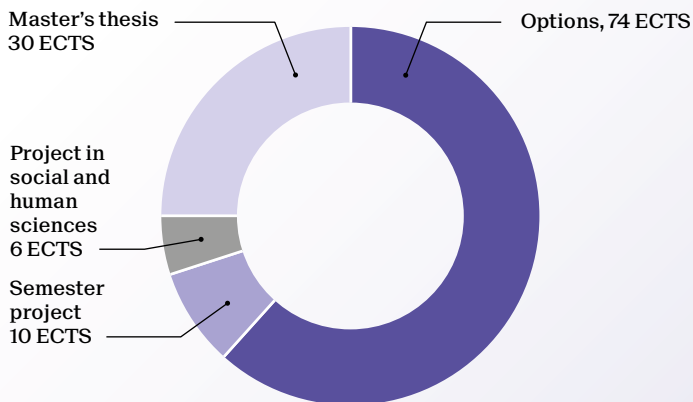


Master of Science in MECHANICAL ENGINEERING

2-year program - 120 ECTS



Industrial internship

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

The program can be built around one of the following specializations (30 ECTS necessary):

- A Fluid mechanics
- B Automatic and systems
- C Design and production
- D Thermal sciences
- E Mechanics of solids and structures
- F Biomechanics

Students can also choose a 30 ECTS minor (included in the 120 ECTS). Recommended minors with this program:

- Biomedical technologies
- Computational science and engineering
- Energy
- Engineering for sustainability
- Management, technology and entrepreneurship
- Materials science
- Space technologies

Career prospects

Due to the omnipresence of mechanical components in the objects that we use in our day-to-day lives, mechanical engineering training offers a great variety of future prospects. At the top of the list, we find the construction domain (including the car industry, shipbuilding, aeronautics or aerospace), but also the machine industry and energy conversion and management.

A large number of students decide to join large corporations and have the opportunity to specialize in the design of new products, at a production or even at a marketing level. In that case, their role will consist in targeting new markets and advising customers. Other students will have the chance to combine all these tasks if they decide to join smaller entities, or if they choose to create their own structure, since the innovation spectrum in mechanical engineering is quite extended. Another important factor to underline is that the mechanical engineering training is world-recognized and allows students to plan a career abroad.

School of Engineering
go.epfl.ch/master-mechanical-engineering
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	Specializations						Credits
	A	B	C	D	E	F	74
Options in mechanical engineering							
Advanced control systems		B	C	D	E	F	3
Advanced energetics				D	E		5
Advanced heat transfer				D			3
Advanced solid mechanics			C		E	F	5
Aerodynamics	A			D	E		4
Aéroélasticité et interaction fluide-structure	A			D	E		3
Applied mechanical design			C		E		5
Biomechanics of the cardiovascular system	A				E	F	3
Biomechanics of the musculoskeletal system					E	F	5
Cavitation et phénomènes d'interface	A			D			3
Commande non linéaire		B	C		E	F	3
Continuous improvement of manufacturing systems			C				5
Data-driven design and fabrication methods		B	C				3
Engines and fuel cells	A			D			4
Experimental methods in engineering mechanics	A				E	F	4
Hydraulic turbomachines	A			D			4
Hydroacoustique pour aménagements hydroélectriques	A			D		F	3
Hydrodynamics	A			D	E	F	5
Instability	A						3
Introduction to additive manufacturing			C				3
Introduction to nuclear engineering				D			2
Lifecycle performance of product systems			C	D			3
Mechanical product design and development			C		E		5
Mechanics of slender structures					E	F	5
Mechanobiology: how mechanics regulate life						F	3
Micro/Nanomechanical devices		B	C		E		4
Micro/Nano robotics		B	C		E	F	3
Model predictive control		B					4
Modeling and optimization of energy systems		B		D			4
Multivariable control		B					4
Multi-agent learning and control		B					4
Nano-scale heat transfer				D			4
Networked control systems		B					3
Numerical flow simulation	A			D		F	5
Numerical methods in biomechanics						F	3
Production management			C				5
Projet génie mécanique II			C	D	E		10
Renewable energy	A			D			4
Solar energy conversion				D			4
System identification		B	C	D		F	3
Systèmes mécatroniques		B	C				5
Thermal power cycles and heat pump systems				D			3
Turbulence	A						5
Two-phase flows and heat transfer	A			D			3

Options in other programs							
Advanced additive manufacturing technologies			C		E		3
Advanced composites in engineering structures					E		3
Advanced machine learning		B					4
Advanced satellite positioning		B					4
Applied machine learning		B					4
Assembly techniques					E		2
Basics of mobile robotics		B					4
Basics of robotics for manipulation		B	C				3
Biophysics: physics of biological systems						F	4
Biophysics: physics of the cell						F	3
Capteurs		B			E		5
Commande embarquée de moteurs		B					3
Composites polymères + TP					E		4
Composites technology					E		3
Computational motor control		B				F	4
Computer simulation of physical systems I	A						4
Convex optimization		B					5
Corrosion et protection des métaux + TP			C				3
Déformations des matériaux					E		4
Distributed intelligent systems		B					5
Dynamical system theory for engineers		B					6
Energy and comfort in buildings				D			4
Energy geostructures				D			4
Environmental transport phenomena	A						5
Imaging optics							3
Industrial automation		B					3
Innovation and entrepreneurship in engineering							10
Laser microprocessing			C				2
Legged robots		B					4
Life cycle engineering of polymers					E		2
Machine learning programming		B					2
Materials selection					E		2
Nonlinear analysis of structures					E		6
Numerical approximation of PDEs	A						5
Numerical methods for conservation laws	A						5
Physiologie par systèmes						F	4
Recycling of materials			C				2
Science des polymères					E		3
Selected topics in mechanics of solids and structures					E		3
Sensors in medical instrumentation						F	3
Space mission design and operations			C				2
Statique II					E		4
Surface analysis			C				3
Systèmes embarqués microprogrammés		B					4
Tribology					E		2
Thermodynamics of comfort in buildings				D			3