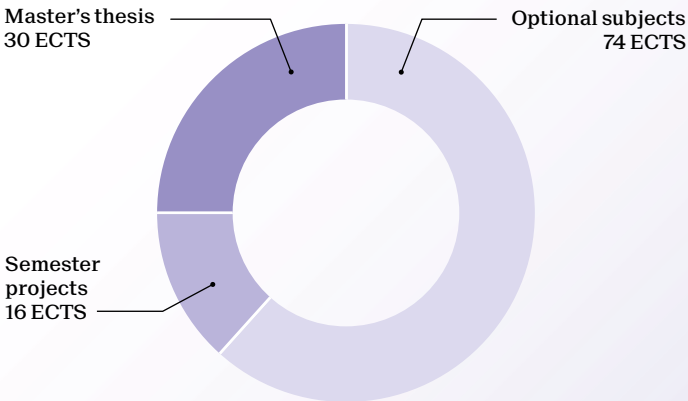


Master of Science in MECHANICAL ENGINEERING

2-year program - 120 ECTS



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

The program must be built around one of the following orientations:

- A Aero-Hydrodynamics
- B Control and Mechatronics
- C Design and Production
- D Energy
- E Mechanics of Solids and Structures
- F Biomechanics

Students can also choose a 30 ECTS Minor (incl. in the 120 ECTS credits):

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

School of Engineering
master.epfl.ch/mechanicalengineering
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	Orientation						Credits
	A	B	C	D	E	F	
Optional subjects							74
Advanced control systems		B	C	D	E	F	3
Advanced energetics				D			5
Advanced heat transfer				D			3
Aérodynamique	A			D	E		3
Aeroelasticity and fluid-structure interaction	A			D	E		3
Bases de la robotique		B	C				3
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
Composites polymères + TP					E		4
Computer-aided engineering			C				5
Conception mécanique intégrée			C		E	F	5
Design methodology			C				5
Dynamique numérique des solides et des structures	A		C		E	F	5
Engines and fuel cells	A			D			4
Fabrication assistée par ordinateur			C				5
Flow of dispersed media	A				E	F	3
Fracture mechanics			C		E	F	4
Hydraulic turbomachines	A			D			4
Hydrodynamics	A			D	E	F	5
Hydrodynamique acoustique	A			D		F	3
Introduction to nuclear engineering				D			2
Instability	A						3
Lifecycle economic and environmental performance of product systems			C	D			3
Mechanics of composites			C		E	F	5
Methods for rapid production and development			C				3
Modelling and optimization of energy systems				D			4
Model predictive control		B					3
Numerical flow simulation	A			D		F	5
Numerical methods in biomechanics						F	3
Numerical methods in heat transfer	A			D			3
Particle-based methods	A				E	F	4
Production management			C				5
Project in mechanical engineering II							10
Renewable energy	A			D			4
Robotique industrielle et appliquée		B	C				2
Simulation and optimisation of industrial applications		B	C				5
Simulation multi-corps assistée par ordinateur		B	C		E	F	3
Systèmes mécatroniques		B	C				5
System identification		B	C	D	E	F	3
Thermal power cycles and heat pump systems				D			2
Turbomachines thermiques	A			D			5
Turbulence	A						3
Two-phase flows and heat transfer	A			D			5

Semester projects							16
Project in mechanical engineering I							10
Project in human and social sciences							6

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.