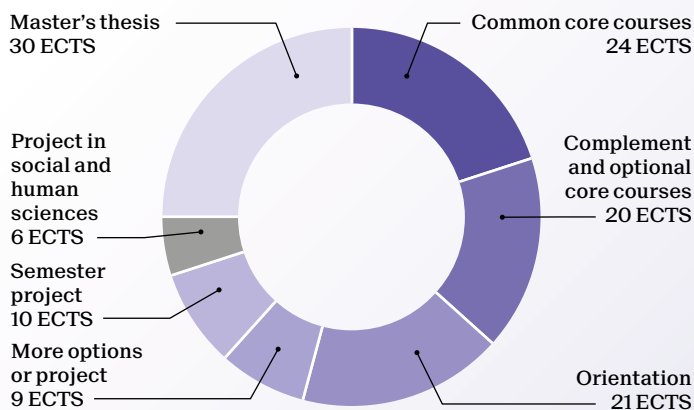


Master of Science in ENERGY SCIENCE AND TECHNOLOGY

2-year program - 120 ECTS



Students must choose 21 ECTS of optional courses in one of these three orientations:

- A Energy conversion devices
- B Energy systems
- C Energy management and sustainability

Orientation	A	B	C	21
Advanced control systems		B		3
Advanced energetics		B		5
Advanced lab in electrical energy systems	A	B		4
Applied data analysis	A	B	C	8
Development engineering			C	4
Distributed intelligent systems			C	5
Electromagnetic compatibility	A			2
Energy storage systems	A			3
Energy and comfort in buildings		B		4
Engines and fuel cells	A			4
Environmental transport phenomena	A			5
Hydropower schemes and pumped-storage				4
Industrial automation	A			3
Industrial electronics II	A			4
Material and energy flow analysis			C	4
Model predictive control	A	B		4
Modelling and optimization of energy systems		B		4
Power system restructuring and deregulation			C	3
Power systems dynamics		B		3
Renewable energy (for ME)		B		4
Sanitary engineering in developing countries			C	3
Smart grids technologies	A	B	C	5
Solar energy conversion	A			4
Sustainability assessment of urban systems			C	3
Water and wastewater treatment			C	5

Industrial internship

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

	Credits
Common core courses	24
Convex optimization	5
Electrochemical engineering	3
Energy conversion and renewable energy	4
Energy supply, economics and transition	2
Fundamentals and processes for photovoltaic devices	3
Hydraulic turbomachines	4
Thermal power cycles and heat pump systems	3

Complement	20
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Students must follow levelling courses depending on their background and choose additional optional core courses to reach 20 ECTS.

EE/MT: students with background in Electrical Engineering or Microengineering
ME: students with background in Mechanical Engineering
SIE: students with background in Environmental Science and Engineering

Additional mandatory courses for EE/MT:	7
Heat and mass transfer	4
Life cycle assessment in energy systems	3

Additional mandatory courses for ME:	11
Fundamentals of electrical circuits and systems I	2
Life cycle assessment in energy systems	3
Principles of power systems	2
Semiconductor devices I	4

Additional mandatory courses for SIE:	14
Fundamentals of electrical circuits and systems I, II	4
Heat and mass transfer	4
Principles of power systems	2
Semiconductor devices I	4

Additional mandatory courses for students from another study program:	17
Fundamentals of electrical circuits and systems I, II	4
Heat and mass transfer	4
Life cycle assessment in energy systems	3
Principles of power systems	2
Semiconductor devices I	4

Optional core courses	3 to 13
Fundamentals of electrical circuits and systems I, II	4
Industrial electronics I	4
Principles of power systems	2
Semiconductor devices I	4
Advanced heat transfer	3
Heat and mass transfer	4
Hydroacoustique pour aménagements hydroélectriques	3
Hydropower plants: generating and pumping units	2
Two-phase flows and heat transfer	3
Applied machine learning	4
Discrete optimization	5
Energy systems engineering	3
Nuclear fusion and plasma physics	4
Thermodynamics of energy conversion and storage	3
Life cycle assessment in energy systems	3
Lifecycle performance of product systems	3
Negotiation techniques	2
Principles of finance	5
Principles of microeconomics	4
Recycling of materials	2
Solid waste engineering	4
Transitions, sustainability and technology policy	4
Water resources engineering	5

Entry requirements

Candidates should have a Bachelor's degree from a reputable university and excellent academic performance. The strong interdisciplinary character of the Master's degree in Energy Science and Technology is reflected in the fact that the program is open to a wide range of Bachelor's degree holders in applied sciences and engineering, including but not limited to electrical, mechanical, environmental sciences and engineering.

School of Engineering
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