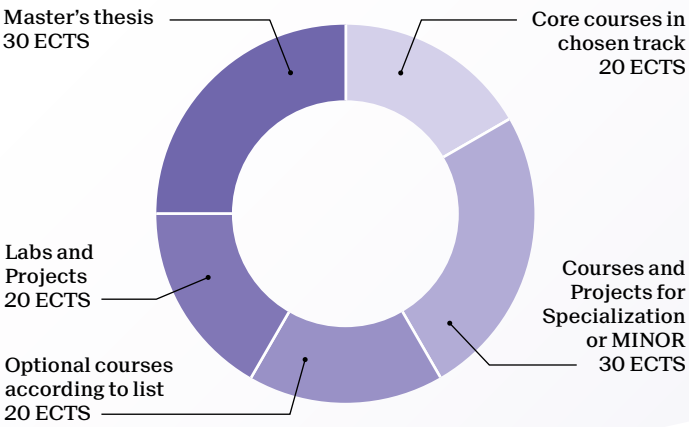
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Master of Science in

ELECTRICAL AND ELECTRONIC ENGINEERING

2-year program - 120 ECTS



	Credits
Labs and Projects	**20**
Lab in Acoustics	4
Lab in EDA based design	4
Lab in Electrical Energy Systems	4
Lab in Microelectronics	4
Lab in Microwaves	4
Lab in Signal and Image Processing	4
Lab on Apps Development for Tablets and Smartphones	4
Project in Electrical Energy Systems	10
Project in Information Technologies	10
Project in Micro and Nanoelectronics	10
Project in human and social sciences	6

Possible Minors:

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

or 30 ECTS internship (4-6 months)

Possible specializations:

A Digital Design and Computer Engineering
B Analog, Mixed-Signal and RF Design
C Data, Signal & Image Science
D Communication Technologies
E Optoelectronics and Optics
F Advanced Control and Communication for Power Systems Operation
G Renewables and Energy Conversion Systems

Industrial internship

The program includes a minimum 8-week long compulsory internship.
A longer internship may be done instead of a specialization or in combination with the Master's thesis.

School of Engineering
master.epfl.ch/electricalengineering
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	Track				Credits
Core courses (one track to be chosen)					
Micro and Nanoelectronics	1				20
Analog circuits design I, II					4
Hardware systems modeling I, II					4
HF and VHF circuits and techniques I					4
VLSI design Fundamentals and advanced					8
Information Technologies		2			20
Image analysis and pattern recognition					4
Mathematics of Data: From Theory to Computation					4
Microwaves					4
Photonic Systems and Technology					4
Wireless Receivers: Algorithms and Architectures					4
Smart Grids Science and Technology			3		20
Industrial electronics I					4
Mathematics of Data: From Theory to Computation					4
Multivariable Control and Coordination Systems					4
Power systems dynamics					4
Smart grids technologies					4

	Specialization							20/
Optional courses / Specialization	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**30**
Advanced analog and RF integrated circuits design I		B						2
Advanced analog and RF integrated circuits design II		B						2
Advanced computer architecture	A							4
Advanced lab in Electrical Energy Systems						F	G	4
Advanced lab in Electrical Engineering	A	B	C	D				4
Advanced multiprocessor architecture	A							6
Advanced signal processing	A		C					3
Advanced Wireless Communications: Algorithms and Architectures				D				3
Analog Circuits for Biochip		B						3
A network tour of data science			C					3
Applied machine learning			C					4
Audio		B	C					3
Automatic speech processing			C					3
Bioelectronics and implantable biomedical microelectronics		B						3
Biological modeling of neural networks								4
Biomedical signal procesing								6
Biomicroscopy I					E			3
Biomicroscopy II					E			4
Bio-nano-chip design								3
Brain computer interaction								3
Compound semiconductor electronic devices					E		G	3
Data converter circuits and systems	A	B						3
Design technologies for integrated systems	A							6
Discrete optimization						F		4
Distributed information systems						F		4
Electrical filters		B						3
Electromagnetic compatibility							G	2
Embedded systems	A							4
Energy conversion and Renewable Energy							G	3
Energy storage systems							G	3
Flexible bioelectronics		B						3
Fundamentals and processes for photovoltaic devices							G	3
Fundamentals of biosensors and electronic biochips		B						3
HF and VHF circuits and techniques II		B						2
Hydropower plants : generating and pumping units							G	2
Image and video processing			C					6
Image communication				D				4
Image optics								3
Industrial automation							G	3
Industrial electronics II							G	4
Information theory and coding	A	B	C	D				7
Integrated circuits technology		B						2
Introduction to computer graphics			C					6
Lasers: theory and modern applications					E			3
Media security								6
Mobile networks				D				4
Model predictive control						F		3
Modeling of emerging electron devices		B						3
Nanoelectronics	A	B						2
Optical communication				D	E			3
Optical detectors					E			3
Optical waves propagation					E			3
Optics III					E			4
Optimal decision making						F		4
Physical models for micro and nanosystems		B						2
Physics of photonic semiconductors devices					E			4
Power system restructuring and deregulation						F		3
Propagation of acoustic waves				D				3
Propagation of electromagnetic waves				D				2
Quantum Electrodynamics and Quantum Optics					E			4
Quantum optics and quantum information					E			4
Real-time embedded systems								4
Réseaux hydrauliques et énergétiques							G	3
Selected topics in advanced optics					E			3
Semiconductor physics and fundamentals of electronic devices					E			4
Seminar in physiology and instrumentation								2
Sensors in medical instrumentation								3
Signal processing for functional brain imaging								3
Space mission design and operations								2
Speech processing								3
Systems and architectures for signal processing	A							2
TCP/IP Networking				D		F		5
Test of VLSI systems	A							2
Wave propagation along transmission lines				D		F		2