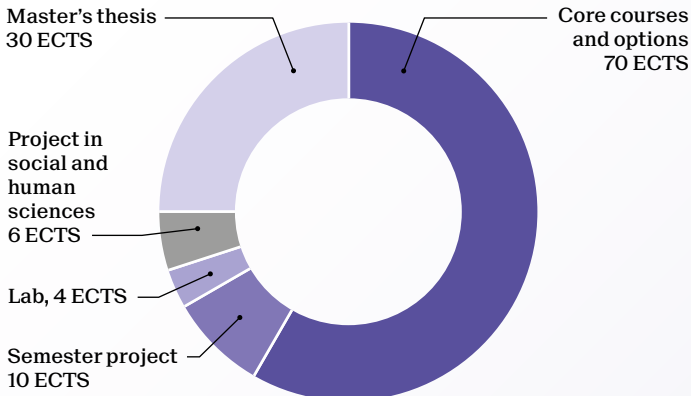


Master of Science in ELECTRICAL AND ELECTRONIC ENGINEERING

2-year program - 120 ECTS



	Specialization							Credits
	A	B	C	D	E	F	G	
Core courses (min. 12 credits)								
Convex optimization				D	E			4
Fundamentals of inference and machine learning	A	B		D	E	F		4
Low power electronics: analog mixed signal design	A	B	C	D				4
Semiconductor devices I	A	B					G	4
Smart grids technologies								5
Wireless receivers: algorithms and architectures	A		C	D		F	G	4
Lab								4
Lab in acoustics								4
Large-scale data science for real-world data				D				4
Lab in EDA based design				D				4
Lab in electrical energy systems								4
Lab in microwaves	A						G	4
Lab in nanoelectronics	A	B						4
Lab in signal and image processing				D				4
Lab on app development for tablets and smartphones				D	E			4

Students may choose a 30 ECTS specialization in:

- A Microelectronic circuits and systems
- B Electronic technologies and device-circuit interactions
- C Bioelectronics
- D Internet of Things (IoT)
- E Data science and systems
- F Signal, image, video and communication
- G Wireless and photonic circuits and systems

Or / and a 30 ECTS minor included in the 120 ECTS.

Recommended minors with this Master:

- Biomedical technologies
- Computational science and engineering
- Energy
- Management, technology and entrepreneurship
- Space technologies

Or / and a 30 ECTS internship (4-6 months)

Industrial internship

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

School of Engineering

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	Specialization							Credits
	A	B	C	D	E	F	G	
Options								
Adaptation and learning					E	F		4
Advanced computer architecture	A							6
Advanced lab in electrical energy systems								4
Advanced lab in electrical engineering								4
Advanced multiprocessor architecture	A			D				6
Advanced VLSI design	A		D					4
Advanced wireless receivers	A			D			G	3
Analog circuits for biochip	A	C	D					3
Applied data analysis				D	E			6
Applied machine learning				D	E			4
Audio						F		3
Automatic speech processing					E	F		3
Bioelectronics and biomedical microelectronics	A	B	C	D				3
Biological modeling of neural network			C					4
Biomedical signal processing				D		F		6
BioMEMS			C					2
Biometrics								3
Biomicroscopy I	A		C	D			G	3
Biomicroscopy II				C	D			4
Bio-nanochip design				C	D			3
Causal inference					D	E	F	3
Cellular and molecular biology I				C				3
Computational photography						F		5
Computer architecture II	A							4
Conception de mécanismes spatiaux : introduction								2
Data visualization					E			4
Deep learning					D	E	F	4
Deep learning for optical imaging						E	F	2
Design technologies for integrated systems	A	B	C	D		F		6
Discrete optimization					D	E		5
Distributed information systems					D		F	4
Distributed intelligent systems	A					F		5
Electromagnetic compatibility								2
Embedded systems	A		C	D				4
Energy conversion and renewable energy								4
Energy storage systems								3
Flexible bioelectronics			C	D				4
Fundamentals and processes for photovoltaic devices								3
Fundamentals of biomedical imaging				C				4
Fundamentals of biosensors and electronic biochips					C	D		3
Fundamentals of neuroengineering					C			4
Fundamentals of VLSI design	A	B	C	D				4
Hydropower plants: generating and pumping units								2
Image analysis and pattern recognition						E	F	4
Image and video processing					D		F	6
Imaging optics	A							3
Industrial automation								3
Industrial electronics I, II								8
Information theory and coding	A			D	E	F		7
Integrated circuits technology	A							2
Introduction to computer graphics						F		6
Lasers: theory and modern applications	A						G	4
Lessons learned from the space exploration								2
Low-power analog IC design	A		C				G	2
Low-power radio design for IoT	A			D			G	3
Machine learning	A				E			7
Mathematics of data: from theory to computation						E		6
Media security					D	F		6
Microwaves, the basics of wireless communications	A		C			F	G	4
Mobile networks	A			D				4
Model predictive control					D			3
Multivariable control and coordination systems								4
Nanoelectronics	A		C	D				2
Networked control systems					D			3
Network machine learning					D	E	F	4
Optical communication	A					F	G	3
Optical detectors	A						G	3
Optics laboratories I	A						G	3
Optimal decision making					D			4
Photonic micro- and nanosystems	A							2
Photonic systems and technology	A					F	G	4
Physical models for micro- and nanosystems	A							2
Physics of photonic semiconductor devices	A						G	4
Power system restructuring and deregulation								3
Power systems dynamics								3
Project in electrical engineering	A		C	D	E	F	G	10
Projet en technologies spatiales								12
Quantum electrodynamics and quantum optics	A						G	6
Quantum optics and quantum information	A						G	6
Real-time embedded systems	A			D				4
Scaling laws and simulations in micro- and nanosystems					C			4
Selected topics in advanced optics	A						G	3
Semiconductor devices II	A	B					G	4
Semiconductor physics and light-matter interaction								4
Seminar in physiology and instrumentation								2
Sensors in medical instrumentation			C					3
Signal processing for functional brain imaging						F		3
Smart sensors for IoT					D			3
Social media						F		2
Space mission design and operations								2
Spacecraft avionics architectures								2
Spacecraft design and system engineering								4
Statistical inference and machine learning	A	B		D	E	F		4
Statistics for data science								6
Summer workshop								4
Systems and architectures for signal processing	A							2
TCP/IP networking								6
Test of VLSI systems	A							2
Transdisciplinary project								4
Wave propagation along transmission lines						F		2