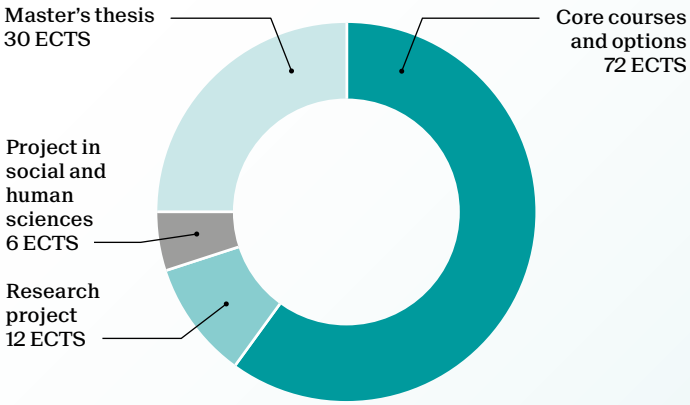
Master of Science in

COMMUNICATION SYSTEMS

2-year program - 120ECTS



The program includes a compulsory internship of eight weeks during the summer, or six months during the semester. The internship can also be combined with the master's thesis.

Students may choose a 30 ECTS specialization in:

A Computer engineering
B Data analytics
C Foundations of software
D Cyber security
E Networking and mobility
F Signals, images and interfaces
G Software systems
H Wireless communications
I Computer science theory
J Internet information systems

They may also opt for a Teaching specialization (30 ECTS at the *Haute école pédagogique du canton de Vaud*).

Or choose a 30 ECTS minor included in the 120 ECTS.

Career prospects

The internship portal, with more than 3000 active contacts, is a very effective way to promote internships and master projects. All the big companies like Sony International, NEC Labs and AIP Riken are listed, but not only. There are many SMEs and start-ups too. The EPFL Innovation Park, a few steps away from the campus, hosts many R&D laboratories such as Logitech, or Swisscom. These companies hire a large number of Communication Systems students for internships or master's projects and also collaborate with researchers from the IC School.

The EPFL Innovation Park is the springboard for numerous start-ups, most of which have emerged from the IC School.

It only takes on average 7 weeks to find one's first job. Moreover, many Communication Systems graduates receive a job offer during the last semester of their training. Companies such as Oracle, Google, Meta, or Microsoft recruit directly on campus by participating in various events.

School of Computer and Communication Sciences
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	Specialization										Credits
Core courses (min. 32 credits)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	
Algorithms II		B	C	D	E				I		8
Advanced probability and applications		B						H	I		8
Cryptography and security				D	E					J	8
Distributed algorithms			C		E		G		I	J	8
Information security and privacy		B		D	E		G				8
Information theory and coding		B						H	I		8
Machine learning		B				F			I	J	8
Mobile networks				D	E		G	H			8
Modern digital communications					E	F		H			8
Statistical signal and data processing through applications		B				F		H			8
TCP/IP networking				D	E		G	H			8

Options	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	
Advanced compiler construction	A		C				G				6
Advanced computer architecture	A			D			G				8
Advanced computer graphics						F					6
Advanced cryptography				D							6
Advanced multiprocessor architecture	A						G				6
Advanced topics on privacy enhancing technologies				D							8
AI product management											6
Applied biomedical signal processing						F					4
Applied biostatistics											5
Applied data analysis		B									8
Artificial neural network/reinforcement learning											6
Automatic speech processing						F					3
Basics of mobile robotics											4
Bioimage informatics						F					4
Causal inference											4
Causal thinking											5
Cellular biology and biochemistry for engineers											4
Computational complexity		B							I		6
Computational neuroscience: neural dynamics											5
Computational photography						F					6
Computer vision						F					6
Computers and music						F					6
Concurrent computing			C				G		I		6
Data visualization		B									6
Decentralized systems engineering							G				8
Deep learning						F					4
Deep learning in biomedicine											6
Design technologies for integrated systems	A										6
Digital education											6
Distributed intelligent systems	A										5
Dynamical system theory for engineers											6
Embedded system design	A										6
Ethics and law of AI											4
Experience design						F					6
Formal verification	A		C	D							6
Foundations of probabilistic proofs				D					I		6
Geometric computing						F					6
Gödel and recursivity									I		5
Image processing I, II						F					6
Industrial automation											3
Intelligent agents										J	6
Interaction design										J	6
Introduction to IT consulting										J	6
Introduction to natural language processing		B								J	6
Learning theory											6
Machine learning for behavioral data											6
Management de projet et analyse du risque											4
Markov chains and algorithmic applications		B							I		6
Mathematical foundations of signal processing						F					6
Modern natural language processing		B								J	8
Networks out of control		B			E			H		J	6
Number theory in cryptography				D							5
Optimization for machine learning											8
Optional research project in communication syst.											8
Principles of computer systems	A		C	D			G				8
System programming for Systems-on-Chip	A										6
Systems for data management and data science		B	C				G			J	8
Social media										J	2
Software security				D							6
Statistical mechanics and Gibbs measures											5
Statistical physics of computation											4
Statistics for data science		B									8
Student seminar: security protocols and applications				D							3
Sublinear algorithms for big data analysis									I		6
The GC maker project						F					6
Topics in software security			C								3
Topics in theoretical computer science		B							I		6
Virtual reality						F					6
Visual intelligence: machines and minds						F					6