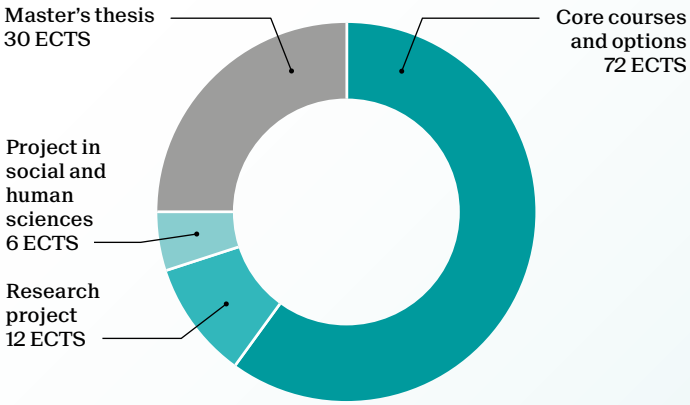
Master of Science in

COMPUTER SCIENCE

2-year program - 120 ECTS



Core courses in various research domains:

AIML	Artificial Intelligence & Machine Learning
ATCS	Algorithms & Theoretical Computer Science
CAIS	Computer Architecture & Integrated Systems
DC	Distributed Computing
DMIR	Data Management & Information Retrieval
CG	Computer Graphics
ICT	Information & Communication Theory
NLP	Natural Language Processing
OSNET	Operating Systems & Networks
PLFM	Programming Languages & Formal Methods
SIP	Signal & Image Processing
SP	Security & Privacy

Students may choose a 30 ECTS specialization in:

K AI & Data Science
L Computer Systems
M Foundations of Computing
N Cyber Security

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.

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.

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 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 Cisco, Logitech, or Swisscom. These companies hire a large number of Computer Science students for internships or master's projects and also collaborate with researchers from the IC School.
It only takes on average 7 weeks to find one's first job (many graduates even receive offers 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) At least 4 courses in 4 distinct domains	**Domain**	**K**	**L**	**M**	**N**	**32**
Machine learning	AIML	K				8
Optimization for machine learning	AIML	K				8
Algorithms II	ATCS			M		8
Advanced computer architecture	CAIS		L		N	8
Advanced multiprocessor architecture	CAIS		L			8
Decentralized systems engineering	DC		L		N	8
Distributed algorithms	DC		L	M		8
Applied data analysis	DMIR	K				8
Systems for data management and data science	DMIR		L			8
Advanced computer graphics	CG		L	M		8
Geometric computing	CG			M		8
Advanced probability and applications	ICT			M		8
Foundations of data science	ICT			M		8
Information theory and coding	ICT			M		8
Modern natural language processing	NLP	K				8
Advanced networks	OSNET		L			8
Mobile networks	OSNET		L			8
Modern digital communications: a hands-on-approach	OSNET		L			8
Principles of computer systems	OSNET		L			8
Formal verification	PLFM			M	N	8
Interactive theorem proving	PLFM			M	N	8
Statistical signal and data processing through applications	SIP			M		8
Advanced topics on privacy enhancing technologies	SP				N	8
Cryptography and security	SP				N	8
Information security and privacy	SP				N	8
Software security	SP				N	8

Options	**K**	**L**	**M**	**N**	**40**
Advanced compiler construction		L			6
Advanced cryptography			M	N	6
Advanced operating systems		L			6
AI product management	K				6
Applied biomedical signal processing					4
Applied biostatistics					5
Automatic speech processing					4
Basics of mobile robotics					4
Causal inference					4
Causal thinking					5
Computational complexity			M		6
Computational neuroscience: neural dynamics					5
Computer vision	K				6
Computers and music			M		6
Concurrent computing		L	M		6
Data visualization	K				6
Deep learning					4
Deep learning in biomedicine	K				6
Deep reinforcement learning	K				6
Design technologies for integrated systems		L			6
Digital education	K				6
Distributed information systems		L			6
Dynamical system theory for engineers			M		6
Embedded systems design		L			6
Ethics and Law of AI					4
Experience design	K				6
Foundation models and generative AI	K				6
Foundations of probabilistic proofs			M	N	6
Gödel and recursivity					5
Image processing I					3
Image processing II					3
Industrial automation					3
Interaction design	K				6
Introduction to IT consulting					6
Introduction to natural language processing	K				6
Introduction to quantum cryptography			M	N	6
Learning in neural networks	K				6
Learning theory	K		M		6
Machine learning for behavioral data	K				6
Management de projet et analyse du risque					4
Markov chains and algorithmic applications			M		6
Network machine learning					4
Networks out of control			M		6
Number theory II.d - Cryptography					5
Optional research project in computer science II					8
Secure hardware design				N	6
Student seminar: security protocols and applications			M	N	3
Sublinear algorithms for big data analysis			M		6
System programming for Systems-on-Chip		L			6
Topics in software security		L		N	3
Topics in theoretical computer science			M		6
Visual Intelligence	K				6

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