COMMUNICATION SYSTEMS

EPFL

The Master's program in Communication Systems offers a unique education emphasizing the interplay of mathematics, computer science and electrical engineering. It covers fields like wireless communications, networking and mobility, internet computing, information security or signal processing and includes minors such as space technology.

GroupStreamer:
to sing from the same song sheet

Party organizers finally have a neutral friend, which helps them in the difficult choice of which music to play. GroupStreamer is a smartphone app that works as a mediator between organizers, DJ and guests. Once the app is installed, the DJ creates a group and invites other guests to join it. Each participant's playlist is scanned. The tool analyses every song and save the ones that appear more often. Lucas Maystre designed and developed this tool from A to Z for his Master project.

Discover the whole story:
http://actu.epfl.ch/news/groupstreamer-to-sing-from-the-same-song-sheet/

Patricia Pérez:
"The high level of demand of the classes teaches us to surpass ourselves and to go beyond obstacles imposed by some constraints."

Read more:

© GroupStreamer

"We bring radioactivity data to the Japanese public"

Olivier Roy:
"I had told myself: 'well, one thing I am sure of is that these concepts will never be useful'. Fifteen years later, I have to admit that I use them on an everyday basis to develop novel medical imaging technologies that will, one day perhaps, save lives."
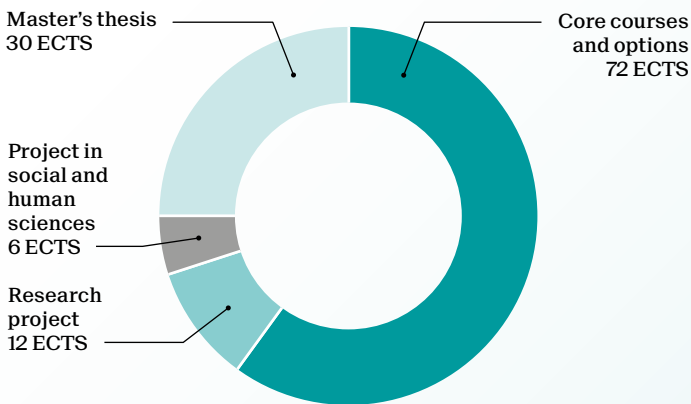
© Safecast

"After the Fukushima reactor fallout, empowering people to take their own readings was a reaction to the outstanding lack of transparency. The first prototype was ready to go after less than one week of work. We now lend out DIY portable Geiger-counters and then post the data online. The bGeigie takes level readings with geographical coordinates and records the information on a standard SD card. Then users upload this information to our website and we make this data available for all," explains Robin Scheibler who launched the whole initiative named Safecast.

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Discover the whole story:
http://actu.epfl.ch/news/we-bring-radioactivity-data-to-the-japanese-publ-3/

Master of Science in
COMMUNICATION SYSTEMS

2-year program - 120ECTS

Master's thesis
30 ECTS

Core courses and options
72 ECTS

Project in social and human sciences
6 ECTS

Research project
12 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.

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
go.epfl.ch/master-communication-systems
contact: eileen.hazboun@epfl.ch

Core courses (min. 32 credits)	A	B	C	D	E	F	G	H	I	J	Credits
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