

Les enseignants, les crédits et la période des cours sont indiqués sous réserve de modification.

Code	Matières	Enseignants	Sections	Crédits	Période des cours	
	Spécialisation A "COMPUTER ENGINEERING"	Responsable : Prof. P. Ienne		64		
CS-420	* Advanced compiler construction	Schinz	IN	4		P
CS-470	Advanced computer architecture	Ienne	IN	6		P
CS-471	Advanced multiprocessor architecture (pas donné en 2020-21)	Falsafi	IN	6	A	
EE-431	* Advanced VLSI design	Burg	EL	4		P
CS-472	Design technologies for integrated systems	De Micheli	IN	6	A	
ENG-466	Distributed intelligent systems	Martinoli	SIE	5		P
CS-473	Embedded systems	Beuchat	IN	4	A	
CS-550	Formal verification	Kuncak	IN	6	A	
EE-429	* Fundamentals of VLSI Design	Burg	EL	4	A	
EE-432	* Hardware systems modeling I	Vachoux	EL	2	A	
EE-433	* Hardware systems modeling II	Vachoux	EL	2		P
EE-490b	* Lab in EDA based design	Vachoux/Koukab	EL	4	A	
CS-522	Principles of computer systems	Argyaki/Candea	SC/IN	7	A	
CS-476	Real-time embedded systems	Beuchat	IN	4		P
	Spécialisation B "DATA ANALYTICS"	Responsable : Prof. M. Grossglauser/Prof. P. Thiran		98		
CS-450	Advanced algorithms	Kapralov	IN	7		P
COM-417	Advanced probability and applications	Lévêque	SC	6		P
CS-401	Applied data analysis	West	IN	6	A	
CS-524	Computational complexity (pas donné en 2020-21)	Svensson	IN	4	A	
CS-422	Database systems	Ailamaki		7		P
COM-480	Data visualization	Vuillon	SC	4		P
CS-423	Distributed information systems	Aberer	SC	4	A	
COM-404	Information theory and coding	Telatar	SC	7	A	
COM-402	Information security and privacy	Hubaux/Oechsli	SC	6	A	
COM-308	* Internet analytics	Grossglauser	SC	5		P
CS-431	Introduction to natural language processing	Chappelier / Rajman	IN	4	A	
COM-516	Markov chains and algorithmic applications	Lévêque/Macris	SC	4	A	
COM-512	Networks out of control	Grossglauser/Thiran	SC	4		P
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
COM-503	Performance evaluation	Le Boudec	SC	7		P
COM-500	Statistical signal and data processing through applications	Ridolfi	SC	6		P
MATH-413	Statistics for Data science	Ohlede	MA	6	A	
CS-455	Topics in theoretical computer science	Kapralov	IN	4	A	
	Spécialisation C "FOUNDATIONS OF SOFTWARE"	Responsable : Prof. M. Odersky		53		
CS-450	Advanced algorithms	Kapralov	IN	7		P

CS-420	*	Advanced compiler construction	Schinz	IN	4		P
CS-453		Concurrent algorithms	Guerraoui	SC	5	A	
CS-422		Database systems	Ailamaki	IN	7		P
CS-451		Distributed algorithms	Guerraoui	SC	6	A	
CS-550		Formal verification	Kuncak	IN	6	A	
CS-452	*	Foundations of software	Odersky	IN	4	A	
COM-503		Performance evaluation	Le Boudec	SC	7		P
CS-522		Principles of computer systems	Argyraiki/Candea	SC/IN	7	A	
		Spécialisation D - CYBER SECURITY - SP	Responsable : C. Troncoso		77		
CS-450		Advanced algorithms	Kapralov	IN	7		P
CS-470		Advanced computer architecture	Ienne	IN	6		P
COM-501		Advanced cryptography	Vaudenay	SC	4		P
CS-523		Advanced topics on privacy enhancing technologies	Troncoso	IN	7		P
EE-431	*	Advanced VLSI design	Burg	EL	4		P
COM-401		Cryptography and security	Vaudenay	SC	7	A	
CS-550		Formal verification	Kuncak	IN	6	A	
EE-429	*	Fundamentals of VLSI Design	Burg	EL	4	A	
COM-402		Information security and privacy	Hubaux/Oechslin	SC	6		P
COM-405		Mobile networks	Hubaux	SC	4		P
CS-522		Principles of computer systems	Argyraiki/Candea	SC/IN	7	A	
CS-412		Software security	Payer	IN	6		P
COM-506		Student seminar : security protocols and applications	Oechslin/Vaudenay	SC	3		P
COM-407		TCP/IP networking	Le Boudec	SC	6	A	
		Spécialisation E. "NETWORKING AND MOBILITY"	Responsable : Prof. J.-Y. Le Boudec		57		
CS.450		Advanced algorithms	Kapralov	IN	7		P
COM-401		Cryptography and security	Vaudenay	SC	7	A	
CS-451		Distributed algorithms	Guerraoui	SC	6	A	
CS-423		Distributed information systems	Aberer	SC	4	A	
COM-402		Information security and privacy	Hubaux/Oechslin	SC	6	A	
COM-405		Mobile networks	Hubaux	SC	4		P
COM-430		Modern digital communication : A hands-on approach	Rimoldi	SC	6	A	
COM-512		Networks out of control (pas donné en 2020-21)	Thiran P./Grossglauser	SC	4		P
COM-503		Performance evaluation	Le Boudec	SC	7		P
COM-407		TCP/IP networking	Le Boudec	SC	6	A	
		Spécialisation F. "SIGNALS, IMAGES, AND INTERFACES"	Responsable : Prof. M. Pauly		79		
CS-440		Advanced computer graphics	Jakob	IN	6		P
EE-554		Automatic speech processing	Bourlard	EL	3	A	
EE-512		Biomedical signal processing	Vesin	EL	6	A	
CS-413		Computational photography	Süsstrunk	SC	5		P
CS-442		Computer vision	Fua	IN	4		P
CS-446		Digital 3D Geometry Processing (pas donné en 2020-2021)	Pauly	IN	5	A	
CS-489		Experience design	Huang	IN	6	A	
MICRO-511		Image processing I	Unser/Van De Ville	MT	3	A	

MICRO-512	Image processing II	Unser/Van De Ville	MT	3		P
CS-341	* Introduction to computer graphics	Pauly	IN	6		P
COM-514	Mathematical foundations of signal processing	Simeoni /Behar Haro	SC	6	A	
COM-430	Modern digital communication : A hands-on approach	Rimoldi	SC	6	A	
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
EE-511	Sensors in medical instrumentation	Aminian	EL	3		P
COM-500	Statistical signal and data processing through applications	Ridolfi	SC	6		P
CS-444	Virtual reality	Boulic	IN	4		P
	Spécialisation G "SOFTWARE SYSTEMS"	Responsable : Prof. G. Candea		74		
CS-420	* Advanced compiler construction	Schinz	IN	4		P
CS-470	Advanced computer architecture	Ienne	IN	6		P
CS-471	Advanced multiprocessor architecture (pas donné en 2020-21)	Falsafi	IN	6	A	
CS-453	Concurrent algorithms	Guerraoui	SC	5	A	
CS-422	Database systems	Ailamaki	IN	7		P
CS-438	Decentralized systems engineering	Ford	IN	6	A	
CS-451	Distributed algorithms	Guerraoui	SC	6	A	
CS-452	* Foundations of software	Odersky	IN	4	A	
COM-402	Information security and privacy	Hubaux/Oechslin	SC	6	A	
COM-405	Mobile networks	Hubaux	SC	4		P
COM-503	Performance evaluation	Le Boudec	SC	7		P
CS-522	Principles of computer systems	Argyrazi/Candea	SC/IN	7	A	
COM-407	TCP/IP networking	Le Boudec	SC	6	A	
	Spécialisation H. "WIRELESS COMMUNICATIONS"	Responsable : Prof. E. Telatar		42		
COM-417	Advanced probability and applications	Lévêque	SC	6		P
COM-404	Information theory and coding	Telatar	SC	7	A	
COM-405	Mobile networks	Hubaux	SC	4		P
COM-430	Modern digital communication : A hands-on approach	Rimoldi	SC	6	A	
COM-512	Networks out of control (pas donné en 2020-21)	Thiran P./Grossglauser	SC	4		P
EE-345	* Rayonnement et antennes	Skrivervik	EL	3	A	
COM-500	Statistical signal and data processing through applications	Ridolfi	SC	6		P
COM-407	TCP/IP networking	Le Boudec	SC	6	A	
	Spécialisation I. "COMPUTER SCIENCE THEORY"	Responsable : Prof. O. Svensson		85		
CS.450	Advanced algorithms	Kapralov	IN	7		P
COM-417	Advanced probability and applications	Lévêque	SC	6		P
MAT-460	* Combinatorial optimization	Eisenbrand	MA	5	A	
CS-524	Computational complexity (pas donné en 2020-21)	Svensson	IN	4	A	
MATH-472	* Computational finance	Glau/Pulido	MA	5	A	
CS.453	Concurrent algorithms	Guerraoui	SC	5	A	
MATH-461	* Convexity	Eisenbrand	MA	5	A	
CS-451	Distributed algorithms	Guerraoui	SC	6	A	
MATH-483	Gödel and recursivity	Duparc	MA	5	A	
COM-404	Information theory and coding	Telatar	SC	7	A	
COM-300	* Modèles stochastiques pour les communications	Thiran	SC	6	A	

CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
MATH-467	Probabilistic method in combinatorics	Pach	MA	5	A	
COM-516	Markov chains and algorithmic applications	Lévêque/Macris	SC	4	A	
CS-448	Sublinear algorithms for big data analysis (pas donné en 2020-21)	Kapralov	IN	4		P
CS-455	Topics in theoretical computer science	Kapralov	IN	4	A	
	Spécialisation J. "INTERNET INFORMATION SYSTEMS"	Responsable : Prof. B. Faltings et Prof. K. Aberer		64		
COM-401	Cryptography and security	Vaudenay	SC	7	A	
CS-422	Database systems	Ailamaki	IN	7		P
CS-451	Distributed algorithms	Guerraoui	SC	6	A	
CS-423	Distributed information systems	Aberer	SC	4	A	
CS-491	Enterprise and service-oriented architecture	Wegmann	SC	6		P
CS-486	Interaction design	Pu	IN	4		P
CS-430	Intelligent agents	Faltings	IN	6	A	
CS-431	Introduction to natural language processing	Chappelier/Rajman	IN	4	A	
COM-512	Networks out of control (pas donné en 2020-2021)	Thiran P./Grossglauser	SC	4		P
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
COM-503	Performance evaluation	Le Boudec	SC	7		P
EE-593	Social Media	Gillet/Holzer	EL	2		P

Légende :

* = cours hors plan d'études pour les étudiants ne faisant pas la spécialisation

A = automne, P = printemps - 1 semestre comprend 14 semaines