

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

Code	Matières	Enseignants	Sections	Crédits	Période des cours	
	<b>Spécialisation A "COMPUTER ENGINEERING - SP"</b>	<b>Responsable : Prof. P. lenne</b>		<b>64</b>		
CS-420	Advanced compiler construction	Schinz	IN	4		P
CS-470	Advanced computer architecture	lenne	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
	<b>Spécialisation B "DATA ANALYTICS"</b>	<b>Responsable : Prof. M. Grossglauser/Prof. P. Thiran</b>		<b>102</b>		
EE-558 *	A network tour of data science	Frossard/Vandergheynst	EL	4	A	
CS-450	Advanced algorithms	Kapralov	IN	7		P
COM-417	Advanced probability and applications	Lévêque	SC	6		P
CS-401	Applied data analysis	West	SC	6	A	
CS-524	Computational complexity (pas donné en 2020-21)	Svensson	IN	4	A	
CS-422	Database systems	Ailamaki	IN	7		P
COM-480	Data visualization	Vuillon	SC	4		P
CS-423	Distributed information systems	Aberer	SC	4	A	
COM-402	Information security and privacy	Hubaux/Oechslin	SC	6	A	
COM-404	Information theory and coding	Telatar	SC	7	A	
COM-308 *	Internet analytics	Grossglauser	SC	5		P
CS-431	Introduction to natural language processing	Rajman/Chappelier	IN	4	A	
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
COM-516	Markov chains and algorithmic applications	Lévêque/Macris	SC	4	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-500	Statistical signal and data processing through applications	Ridolfi	SC	6		P
MATH-413 *	Statistics for Data science	Olhede	MA	6	A	
CS-455	Topics in theoretical computer science	Kapralov	IN	4	A	
	<b>Spécialisation C "FOUNDATIONS OF SOFTWARE"</b>	<b>Responsable : Prof. M. Odersky</b>		<b>53</b>		
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	Argyrazi/Candea	SC/IN	7	A	
	<b>Spécialisation D "CYBER SECURITY - SP"</b>	<b>Responsable : Prof. C. Troncoso</b>		<b>71</b>		
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	Hubaux/Troncoso	IN/SC	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	A	
COM-405	Mobile networks	Hubaux	SC	4		P
CS-522	Principles of computer systems	Argyrazi/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	
	<b>Spécialisation E "NETWORKING AND MOBILITY"</b>	<b>Responsable : Prof. J.-Y. Le Boudec</b>		<b>51</b>		
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 communications : 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	
	<b>Spécialisation F "SIGNAL, IMAGES AND INTERFACES"</b>	<b>Responsables : Prof. M. Pauly</b>		<b>85</b>		
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
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
COM-514	Mathematical foundations of signal processing	Simeoni /Behar Haro	SC	6	A	
COM-430	Modern digital communications : A hands-on approach	Rimoldi	SC	6	A	
EE-511	Sensors in medical instrumentation	Aminian	EL	3		P
COM-303 *	Signal processing for communications	Prandoni	SC	6		P
COM-500	Statistical signal and data processing through applications	Ridolfi	SC	6		P
CS-444	Virtual reality	Boulic	IN	4		P

	<b>Spécialisation G "SOFTWARE SYSTEMS"</b>	<b>Responsable : Prof. G. Candea</b>		<b>74</b>		
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/IN	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	Argyaki/Candea	SC/IN	7	A	
COM-407	TCP/IP networking	Le Boudec	SC	6	A	
	<b>Spécialisation H "WIRELESS COMMUNICATIONS"</b>	<b>Responsable : Prof. E. Telatar</b>		<b>46</b>		
COM-417	Advanced probability and applications	Lévêque	SC	6		P
COM-404	Information theory and coding	Telatar	SC	7	A	
EE-445 *	Microwaves	Skrivervik	EL	4	A	
COM-405	Mobile networks	Hubaux	SC	4		P
COM-430	Modern digital communications : 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	
	<b>Spécialisation I. "COMPUTER SCIENCE THEORY"</b>	<b>Responsable : Prof. O. Svensson</b>		<b>85</b>		
CS-450	Advanced algorithms	Kapralov	IN	7		P
COM-417	Advanced probability and applications	Lévêque	SC	6		P
MATH-460 *	Combinatorial optimization	Eisenbrand	MA	5	A	
CS-524	Computational complexity (pas donné en 2020-21)	Svensson	IN	4	A	
FIN-472 *	Computational finance	Pulido/Glau	IF	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	
CS-433	Machine learning	Jaggi/Flammarion	IN	7	A	
COM-516	Markov chains and algorithmic applications	Lévêque/Macris	SC	4	A	
COM-300 *	Modèles stochastiques pour les communications	Thiran	SC	6	A	
MATH-467	Probabilistic methods in combinatorics	Marcus	MA	5	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	
	<b>Spécialisation J. "INTERNET INFORMATION SYSTEMS"</b>	<b>Responsable : Prof. B. Faltings et Prof. K. Aberer</b>		<b>64</b>		
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	Rajman/Chappelier	IN	4	A	
CS-433	Machine learning	Jaggi/Flammarion	IN	7	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
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