Génie électrique et électronique 2023-24

Block 2 : Labs and projects

Language	Code	Section	Teacher	Specialization	Master 1 p	Master 2 l	e	p	Exam Session	Exam	Credit
Innovation & entrepreneurship in engineering											
E	MGT-555	MTE	Michaud Weber	2h	8h				Win	During the semester	10
Lab in acoustics											
E	EE-490(a)	EL	Lissek		4h				Win	During the semester	4
Lab in EDA based design											
E	EE-490(b)	EL	Koukab Levisse		4h				Win	During the semester	4
Lab in electrical energy systems											
E	EE-490(c)	EL	Dujic		4h				Win	During the semester	4
Lab in microwaves											
E	EE-490(e)	EL	Skrivervik		4h				Win	During the semester	4
Lab in nanoelectronics											
E	EE-490(i)	EL	Kis		4h				Win	During the semester	4
Lab in signal and image processing											
E	EE-490(f)	EL	Thiran					4h	Sum	During the semester	4
Lab on app development for tablets and smartphones											
E	EE-490(g)	EL	Ansaloni Atienza Alonso		4h				Win	During the semester	4
Lab on cell-free synthetic biology											
E	EE-490(j)	EL	Maerkl		4h				Win	During the semester	4
Large-scale data science for real-world data											
E	COM-490	SC	Bouillet Delgado Sarni Verscheure					4h	Sum	During the semester	6
Project in bioelectronics											
E	EE-492(c)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in data science and systems											
E	EE-492(e)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in electronic devices											
E	EE-492(b)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in internet of things (IoT)											
E	EE-492(d)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in microelectronics											
E	EE-492(a)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in signal, image, video and communication											
E	EE-492(f)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in smart grids technologies											
E	EE-492(h)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
Project in wireless and photonics C&S											
E	EE-492(g)	EL	Profs divers		10h			10h	Sum Win	During the semester	10
HSS : Introduction to project											
		SHS							Win		3
HSS : Project											
		SHS							Sum		3

C : Courses, E : Exercice, P : Pratic courses, * : option courses / F : French courses, D : Deutsch courses, E : English Courses / Sum : Summer, Win : Winter

Group "options"

Language	Code	Section	Teacher	Specialization	M1 C	M1 E	M1 P	M2 C	M2 E	M2 P	Exam Session	Exam	Credit
E	EE-524	EL			1h	2h					Win	Written	3
Adaptation and learning													
E	EE-566	EL	Sayed					2h	2h		Sum	Written	4
Advanced analog integrated circuit design													
E	EE-523	EL						2h	1h		Sum	Written	3
Advanced computer architecture													
E	CS-470	IN	Ienne					3h	2h		Sum	Written	8
Advanced lab in electrical energy systems													
E	EE-588	EL	Hodder Robert							4h	Sum	During the semester	4
Advanced lab in electrical engineering													
E	EE-598	EL	Profs divers				4h			4h	Sum Win	During the semester	4
Advanced multiprocessor architecture													
E	CS-471	IN	Falsafi				4h				Win	During the semester	6
Advanced VLSI design													
E	EE-431	EL	Burg Levisse					2h	2h		Sum	Written	4
Advanced wireless receivers													
E	EE-543	EL						2h	1h		Sum	During the semester	3
Analog circuits for biochip													
E	EE-518	EL	Carrara Schmid Skrivervik					2h	1h		Sum	Written	3
Applied biomedical signal processing													
E	EE-512	EL	Lemay		2h	2h					Win	Written	4
Applied data analysis													
E	CS-401	SC	West		2h	2h					Win	Written	8
Applied machine learning													
E	MICRO-455	MT	Billard		4h						Win	Written	4
Audio engineering													
E	EE-548	EL	Lissek		2h	1h					Win	Written	3
Automatic speech processing													
E	EE-554	EL	Magimai Doss		2h	1h					Win	Written	3
Basics in bioinstrumentation													
E	BIOENG-421	SV	Merten		1h	1h	2h				Win	During the semester	4
Bioelectronics and biomedical microelectronics													
E	EE-519	EL	Schmid		2h	1h					Win	Written	3
Biomicroscopy I													
E	MICRO-561	SV	Altug		3h						Win	Written	3
Biomicroscopy II													
E	MICRO-562	SV	Altug Seitz					1h	1h	2h	Sum	During the semester	4
Bio-nano-chip design													
E	EE-517	EL	Carrara		2h	1h					Win	Written	3
Causal inference													
E	MGT-416	MTE						2h	1h		Sum	During the semester	4
Cellular and molecular biology I													
E	BIO-205	SV	Oricchio Suter		2h	2h					Win	Written	4
Classical and quantum photonic transducers													
E	MICRO-410	MT	Benea-Chelmus					2h	1h		Sum	Oral	3
Computational neurosciences: neuronal dynamics													
E	NX-465	NX	Gerstner					2h	2h		Sum	Written	5
Computational photography													
E	CS-413	SC	Süsstrunk					2h		2h	Sum	During the semester	6
Computer graphics													
E	CS-341	IN	Pauly					2h	1h	2h	Sum	Written	6

				C	E	P	Sem	Exam	Cr
	Data visualization								
E	COM-480	SC	Vuillon		2h	2h	Sum	During the semester	6
	Deep learning								
E	EE-559	EL	Cavallaro		2h	2h	Sum	During the semester	4
	Deep learning for autonomous vehicles								
E	CIVIL-459	GC	Alahi		2h	4h	Sum	During the semester	6
	Deep learning for optical imaging								
E	MICRO-573	MT	Psaltis		2h	1h	Sum	During the semester	3
	Design technologies for integrated systems								
E	CS-472	IN	De Micheli	3h	2h			Win	During the semester	6
	Discrete optimization								
E	MATH-261	MA	Pinchasi		2h	2h	Sum	Written	5
	Distributed information systems								
E	CS-423	SC	Aberer	2h	1h		Win	Written	6
	Distributed intelligent systems								
E	ENG-466	SIE			2h	3h	Sum	Oral	5
	Electromagnetic compatibility								
E	EE-576	EL	Rachidi-Haeri		2h		Sum	During the semester	2
	Embedded system design								
E	CS-476	IN	Kluter		2h	2h	Sum	During the semester	6
	Energy conversion and renewable energy								
E	ME-409	GM	Maréchal Nguyen	2h	1h	1h	Win	Written	4
	Energy storage in power systems: technologies, applications and future needs								
E	EE-466	EL	Torregrossa	2h	1h		Win	Written	3
	Fundamentals & processes for photovoltaic devices								
E	MICRO-565	MT	Ballif		2h	1h	Sum	Written	3
	Fundamentals of biomedical imaging								
E	PHYS-438	PH	Gruetter		2h	2h	Sum	Written	4
	Fundamentals of biosensors and electronic biochips								
E	EE-515	EL		2h	1h		Win	Written	3
	Fundamentals of VLSI design								
E	EE-429	EL	Burg	3h	1h		Win	Written	4
	How to design for value for space applications								
E	EE-522	EL	Ben Hamida		2h	1h	Sum	During the semester	2
	Hydropower plants: generating and pumping units								
E	EE-456	EL	Vagnoni	1h	1h		Win	Written	2
	Image analysis and pattern recognition								
E	EE-451	EL	Bozorgtabar Thiran		2h	2h	Sum	During the semester	4
	Image and video processing								
E	EE-550	EL		4h	2h		Win	Oral	6
	Imaging optics								
E	MICRO-421	MT	Psaltis		2h	1h	Sum	During the semester	3
	Industrial automation								
E	CS-487	SC	Sommer Tournier		2h	1h	Sum	Oral	3
	Industrial electronics I								
E	EE-465	EL	Dujic	2h	2h		Win	Oral	4
	Industrial electronics II								
E	EE-565	EL	Dujic		2h	2h	Sum	Oral	4
	Information theory and coding								
E	COM-404	SC	Telatar	4h	2h		Win	Written	8
	Introduction to bioengineering								
E	EE-526	EL	Maerkl		2h	1h	Sum	Written	3
	Introduction to the design of space mechanisms								
E	EE-580	EL	Feusier		2h		Sum	Oral	2
	Lasers: theory and modern applications								
E	MICRO-422	MT	Kippenberg Moser	3h	1h		Win	Written	4

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	Code	Section	Professor	C1	C2	C3	C4	C5	Semester	Exam	Credits
Lessons learned from the space exploration											
E	EE-582	EL	Toussaint			2h			Sum	During the semester	2
Machine learning											
E	CS-433	IN	Flammarion Jaggi	4h	2h				Win	Written	8
Mathematics of data: from theory to computation											
E	EE-556	EL	Cevher	3h	3h				Win	Written	6
Media security											
E	EE-552	EL				2h	1h		Sum	Written	6
Microwaves, the basics of wireless communications											
E	EE-445	EL	Skrivervik	2h	2h				Win	During the semester	4
Mobile networks											
E	COM-405	SC				3h	2h		Sum	Written	8
Model predictive control											
E	ME-425	GM	Jones	2h	2h				Win	Written	4
Multivariable control											
E	ME-422	GM	Ferrari Trecate	2h	2h				Win	Written	4
Nanoelectronics											
E	EE-535	EL	Ionescu	2h					Win	Written	2
Networked control systems											
E	ME-427	GM	Ferrari Trecate	2h	1h				Win	Written	3
Network machine learning											
E	EE-452	EL	Frossard Thanou			2h		2h	Sum	During the semester	4
Neural interfaces											
E	NX-422	NX	Lacour Shoaran	4h	2h				Win	During the semester	6
New space economy											
E	MGT-462	MTE	Röttgen	1h	1h	1h			Win	During the semester	3
Optical detectors											
E	MICRO-523	MT	Besse	3h					Win	Oral	3
Optics laboratories (spring)											
E	MICRO-423	MT	Pu					3h	Sum	During the semester	3
Optimal decision making											
E	MGT-483	MTE	Kuhn			2h	2h		Sum	Written	4
Photonic systems and technology											
E	EE-440	EL	Brès			2h	2h		Sum	Written	4
Physical models for micro and nanosystems											
E	EE-536	EL	Kis	2h					Win	During the semester	2
Physics of photonic semiconductor devices											
E	PHYS-434	PH	Grandjean			2h	2h		Sum	Oral	4
Power system restructuring and deregulation											
E	EE-570	EL	Cherkaoui			2h	1h		Sum	During the semester	3
Power systems dynamics											
E	EE-470	EL	Cherkaoui			2h	1h		Sum	During the semester	3
Project in electrical engineering											
E	EE-491	EL	Profs divers			10h		10h	Sum Win	During the semester	10
Project in space technology											
F	EE-589	EL	Profs divers			12h		12h	Sum Win	During the semester	12
Quantum electrodynamics and quantum optics											
E	PHYS-453	PH	Kippenberg	2h	2h				Win	Written	6
Quantum optics and quantum information											
E	PHYS-454	PH	Brantut			2h	2h		Sum	Written	6
Radio frequency circuits design techniques											
E	EE-426	EL	Ruffieux	2h	2h				Win	Written	4
Reinforcement learning											
E	EE-568	EL	Cevher			2h	2h	2h	Sum	Oral	6
Scaling laws in micro & nanosystems											
E	MICRO-470	MT	Shea	2h					Win	Oral	2

Language	Code / Course	Section	Teacher	Specialization	M1 C	M1 E	M1 P	M2 C	M2 E	M2 P	Exam Session	Exam	Credit
E	**Selected topics in advanced optics** MICRO-420	MT	Martin		3h						Win	Oral	3
E	**Semiconductor devices II** EE-567	EL	Ionescu Kis					2h	2h		Sum	Written	4
E	**Semiconductor physics and light-matter interaction** PHYS-433	PH	Butté		2h	2h					Win	Written	4
	Seminar in physiology and instrumentation MICRO-568	MT	Radenovic		2h						Win	Written	2
E	**Sensors in medical instrumentation** EE-511	EL	Chételat Ionescu					2h	1h		Sum	Written	3
E	**Smart sensors for IoT** EE-594	EL	Ionescu Paun		2h	1h					Win	Written	3
E	**Social media** EE-593	EL						1h		1h	Sum	During the semester	2
E	**Spacecraft design and system engineering** EE-584	EL	Rodriguez Martinez		2h		2h				Win	During the semester	4
E	**Space mission design and operations** EE-585	EL	Nicollier					2h			Sum	Oral	2
E	**Space propulsion** ENG-510	EL	Jäger					2h	1h		Sum	Oral	3
E	**Statistical inference and machine learning** MGT-448	MTE	Kiyavash		2h	2h					Win	Written	4
E	**Statistics for data science** MATH-413	MA	Rubin					4h	2h		Sum	Written	8
E	**System programming for Systems-on-chip** CS-473	IN	Kluter		2h		2h				Win	During the semester	6
E	**Systems and architectures for signal processing** EE-555	EL	Mattavelli		2h						Win	Oral	2
E	**TCP/IP networking** COM-407	SC	Nikolopoulos		2h	2h	2h				Win	Written	8
E	**Test of VLSI systems** EE-530	EL	Schmid		2h						Win	Written	2
E	**Transdisciplinary project** EE-493	EL	Profs divers							4h	Sum	During the semester	4
E	**Wave propagation along transmission lines** EE-575	EL	Rachidi-Haeri		2h						Win	During the semester	2

Group 1

	Courses				Master 1			Master 2			Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	l	e	p	l	e	p			
E	**Convex optimization** MGT-418	MTE	Kuhn		2h	2h					Win	Written	5
E	**Fundamentals of analog & mixed signal VLSI design** EE-424	EL	Choo Enz		2h	2h					Win	Written	4
E	**Fundamentals of inference and learning** EE-411	EL	Krzakala		2h		2h				Win	During the semester	4
E	**Semiconductor devices I** EE-557	EL	Matioli		3h	1h					Win	During the semester	4
E	**Smart grids technologies** EE-472	EL	Paolone					2h	1h	2h	Sum	Written	5
E	**Wireless receivers: algorithms and architectures** EE-442	EL	Burg		2h	2h					Win	During the semester	4

Internship

	Courses	Master 1	Master 2	Exam	Exam	Credit

C : Courses, E : Exercice, P : Pratic courses, * : option courses / F : French courses, D : Deutsch courses, E : English Courses / Sum : Summer, Win : Winter

Language	Code	Section	Teacher	Specialization	p	l	e	p		Session	
Engineering internship (master in Electrical and Electronical engineering)											
F	EE-596(a)	EL	Profs divers		680h			680h	Sum Win	During the semester	30

Master project

	Courses				Master 1	Master 2	MP Autumn	MP Spring	Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	p	l e p	l e p	l e p			
	Engineering internship credited with master project (master in Electrical and Electronical engineering)										
F	EE-597	EL	Profs divers		320h	320h	320h	320h	Sum Win	Term paper	0
	Master project in Electrical and Electronic Engineering										
	EE-599	EL	Profs divers				900h	900h	Sum Win	Oral	30

C : Courses, E : Exercice, P : Pratic courses, * : option courses / F : French courses, D : Deutsch courses, E : English Courses / Sum : Summer, Win : Winter