

Studies Plan

Ingénierie Physique 2024-25

Block "Projects & SHS"

Courses			Master 1	Master 2	Exam Session	Exam	Credit		
Language	Code	Section	Teacher	Specialization	o p	l e p			
	Physics project I								
	PHYS-421	PH	Profs divers		8h		Win	During the semester	8
	Physics project II								
	PHYS-422	PH	Profs divers			8h	Sum	During the semester	8
	HSS : Introduction to project								
		SHS					Win		3
	HSS : Project								
		SHS					Sum Win		3

Engineering options

Courses			Master 1	Master 2	Exam Session	Exam	Credit		
Language	Code	Section	Teacher	Specialization	o p	l e p			
	Attosecond radiation sources								
E	PHYS-761	EDPY	Carbone Invited professor(s) Puppin		2h 2h		Win	Oral	4
	Computational quantum physics								
E	PHYS-463	PH	Carleo			2h 2h	Sum	Oral	4
	Computer simulation of physical systems I								
E	PHYS-403	PH	Pasquarello		2h 2h		Win	Oral	4
	Electron microscopy: advanced methods								
E	MSE-450	MX	Alexander			2h 1h	Sum	Oral	3
	Experimental methods in physics								
E	PHYS-405	PH	Cantoni Dwir		2h 1h		Win	Oral	3
	Frontiers in nanosciences								
E	PHYS-407	PH	Pivetta Rusponi		2h 1h		Win	Oral	3
	Fundamentals of biomedical imaging								
E	PHYS-438	PH	Gruetter			2h 2h	Sum	Written	4
	Introduction to particle accelerators								
E	PHYS-448	PH	Seidel		2h 2h		Win	Written	4
	Lasers: theory and modern applications								
E	MICRO-422	MT	Kippenberg Moser		3h 1h		Win	Written	4
	Machine learning for physicists								
E	PHYS-467	PH	Zdeborová		2h 2h 1h		Win	Written	6
	Microwave engineering in physics								
E	QUANT-410	SIQ	Manucharyan			2h 1h 1h	Sum	Oral	4
	Modeling and design of experiments								
E	PHYS-442	PH	Fuerbringer		2h 1h 1h		Win	Oral	4
	MRI Practicals on CIBM preclinical imaging systems								
E	PHYS-473	PH	Cudalbu Lanz		2h 1h		Win	During the semester	3
	Nonlinear dynamics, chaos and complex systems								
E	PHYS-460	PH	Février			3h 2h	Sum	Oral	6
	Nonlinear optics for quantum technologies								
E	PHYS-470	PH	Galland			2h 2h	Sum	Oral	4
	Nuclear fusion and plasma physics								
E	PHYS-445	PH	Fasoli		2h 2h		Win	Oral	4
	Nuclear interaction : from reactors to stars								
E	PHYS-461	PH	Rochman		2h 2h		Win	Written	4
	Particle detection								
E	PHYS-440	PH	Haefeli		2h 2h		Win	During the semester	4

E	Physics of life PHYS-468	PH	Stahlberg	2h 2h	Sum	Written	4
E	Physics of materials PHYS-307	PH	La Grange	2h 2h	Win	Oral	4
E	Physics of photonic semiconductor devices PHYS-434	PH	Butté	2h 2h	Sum	Written	4
E	Plasma II PHYS-424	PH	Reimerdes	2h 2h	Sum	Oral	6
E	Quantum optics and quantum information PHYS-454	PH	Brantut	2h 2h	Sum	Written	6
E	Radiation biology, protection and applications PHYS-450	PH	Damet Grilj Pakari	2h 1h	Win	Written	4
E	Radiation detection PHYS-452	PH	Lamirand	2h 1h	Win	Oral	4
E	Selected topics in nuclear and particle physics PHYS-400	PH	Blanc	2h 2h	Sum	Oral	4
E	Semiconductor physics and light-matter interaction PHYS-433	PH	Butté	2h 2h	Win	Written	4
E	Solid state systems for quantum information PHYS-464	PH	Scarlino	2h 2h	Sum	Oral	4
E	Spintronics : basics and applications PHYS-510	PH	Pivetta Rusponi	2h 2h	Sum	Oral	4
E	Topics in biophysics and physical biology PHYS-466	PH	Manley	2h 1h	Sum	During the	3 semester

Internship

Courses			Master 1	Master 2	MP Autumn	MP Spring	Exam Session	Exam	Credit
Language	Code	Section	Teacher	Specialization	h	h	h	h	
				Engineering	680h	680h	680h	680h	30
F	PHYS-596	PH	Profs divers	Engineering			Sum Win	During the semester	

Master project

Courses			MP Autumn	MP Spring	Exam Session	Exam	Credit	
Language	Code	Section	Teacher	Specialization	h	h		
				Master project in Physics Engineering	900h	900h	30	
	PHYS-599(a)	PH	Profs divers	Master project in Physics Engineering			Sum Win	Oral

Physics options

Courses			Master 1	Master 2	Exam Session	Exam	Credit	
Language	Code	Section	Teacher	Specialization	h	h		
E	PHYS-472	PH		Astrophysics II : interactions radiation-matter	2h 2h		Win Written	4
E	PHYS-465	PH	Hirschmann	Astrophysics III : galaxy formation and evolution	2h 2h		Win	Oral
E	PHYS-401	PH	Revaz	Astrophysics IV : stellar and galactic dynamics	2h 2h		Sum	Oral
E	PHYS-402	PH	Kneib	Astrophysics V : observational cosmology	2h 2h		Sum	Oral
E	PHYS-302	PH	Rahi	Biophysics : physics of biological systems	2h 2h		Win	During the semester
E	PHYS-502	PH		Interacting quantum matter	3h 1h		Win	Oral

E	Introduction to astroparticle physics							
	PHYS-439	PH	Neronov Perrina Savchenko	2h 2h	Sum	Oral	4	
E	Magnetism in materials							
	PHYS-491	PH	Zivkovic	2h 2h	Sum	Oral	4	
E	Mathematical aspects of quantum physics							
	PHYS-469	PH	Bossoney	2h 2h	Win	Oral	4	
E	Neutron and X-ray Scattering of Quantum Materials							
	PHYS-640	EDPY	Fogh Rønnow Schmitt	2h 2h	Win	Oral	4	
E	Particle physics: the flavour frontiers							
	PHYS-471	PH	Marchevski	2h 2h	Sum	Oral	4	
E	Particle physics I							
	PHYS-415	PH	Marchevski	2h 2h	Win	Oral	4	
E	Particle physics II							
	PHYS-416	PH	Shchutska	2h 2h	Sum	Oral	4	
E	Plasma I							
	PHYS-423	PH	Theiler	2h 3h	Win	Oral	6	
E	Quantum computing							
	PHYS-541	PH	Savona	3h 2h	Win	Oral	6	
E	Quantum electrodynamics and quantum optics							
	PHYS-453	PH	Kippenberg	2h 2h	Win	Written	6	
E	Quantum field theory I							
	PHYS-431	PH	Rattazzi	3h 2h	Win	Oral	6	
E	Quantum field theory II							
	PHYS-432	PH	Rattazzi	3h 2h	Sum	Oral	6	
E	Quantum information theory							
	PHYS-550	PH	Holmes	2h 2h	Sum	Written	4	
E	Quantum physics III							
	PHYS-425	PH	Yazyev	2h 3h	Win	Oral	6	
E	Quantum physics IV							
	PHYS-426	PH	Carleo Rossi	2h 2h	Sum	Written	6	
E	Quantum transport in mesoscopic systems							
	PHYS-462	PH	Banerjee	2h 2h	Sum	Oral	4	
E	Relativity and cosmology I							
	PHYS-427	PH	Penedones	3h 2h	Win	Written	6	
E	Relativity and cosmology II							
	PHYS-428	PH	Gorbenko	2h 2h	Sum	Written	6	
E	Solid state physics III							
	PHYS-419	PH	Läuchli Herzig	3h 2h	Win	Oral	6	
E	Solid state physics IV							
	PHYS-420	PH	Carbone	2h 2h	Sum	Oral	4	
E	Statistical physics III							
	PHYS-435	PH		2h 2h	Win	Written	6	
E	Statistical physics IV							
	PHYS-436	PH	Kippenberg	2h 2h	Sum	Written	6	
E	Statistical physics of biomacromolecules							
	PHYS-441	PH		2h 2h	Win	Oral	4	
E	Statistical physics of computation							
	PHYS-512	PH	Erba	2h 2h	Win	Written	4	