

Block view of the study programme

Or Th Pr Au Cr

Block 1
Core curriculum compulsory courses

PHYS0974-1	<i>Materials physics and biophysics</i> - Maryse HOEBEKE, Alejandro SILHANEK - Suppl : Bertrand DUPÉ	Q1	30	-	-	5
PHYS0930-1	<i>Atomic physics</i> - Thierry BASTIN, François DAMANET, Peter SCHLAGHECK	Q1	30	-	-	5
PHYS0975-1	<i>Introduction to soft matter and complex systems</i> - Nicolas VANDEWALLE	Q1	30	-	-	5

Common core courses

In agreement with the Jury, choose a subject among :

Basic course

SSTG0016-1	<i>Training sessions and personal work</i> (english language) - COLLÉGIALITÉ, ISLV	Q2	15	45	-	5
PHYS0983-1	<i>Seminars in advanced physics I</i> (english language) - <i>Materials physics and biophysics</i> - COLLÉGIALITÉ - <i>Atomic physics</i> - COLLÉGIALITÉ - <i>Physics of soft matter and complex systems</i> - COLLÉGIALITÉ	TA				4
			10	-	-	
			10	-	-	
			10	-	-	

Choisir en accord avec le Jury des cours pour un total de 36 crédits parmi :

Atomic and nuclear

PHYS0932-1	<i>Cold atoms and atomic clocks</i> - Thierry BASTIN Corequisite : PHYS0930-1 - Physique atomique	Q2	20	10	-	4
PHYS2027-2	<i>Ultracold atoms and Bose-Einstein condensates</i> - Peter SCHLAGHECK Corequisite : PHYS0930-1 - Physique atomique PHYS3021-1 - Mécanique quantique avancée	Q2	25	-	-	4
PHYS0235-2	(pas organisé en 2026-2027) <i>Quantum optics</i> - John MARTIN Corequisite : PHYS0930-1 - Physique atomique PHYS3021-1 - Mécanique quantique avancée	Q2	20	10	-	4
PHYS0949-1	<i>Atomic structures modelling</i> - Pascal QUINET Corequisite : PHYS0930-1 - Physique atomique	Q2	10	10	-	4
PHYS0941-2	<i>Theoretical physics : Nuclei and particles</i> - JeanRené CUDELL	Q1	30	-	-	4
PHYS3021-1	<i>Advanced quantum mechanics</i> - Thierry BASTIN, John MARTIN, Peter SCHLAGHECK	Q1	30	-	-	4
PHYS0997-1	<i>Quantum information and computation</i> (english language) - François DAMANET	Q1	30	-	-	4
PHYS3136-1	<i>Open quantum systems</i> (english language) - François DAMANET, John MARTIN - [10h Proj.] Corequisite : PHYS3021-1 - Mécanique quantique avancée PHYS0235-2 - Optique quantique	Q2	20	-	[+]	4
PHYS3138-1	<i>Nuclear physics: energy and materials</i> - David STRIVAY - [1d Vis.]	Q2	25	4	[+]	4

Soft Materials / Statistical Physics

PHYS0969-1	<i>Introduction to biophotonics</i> - Laurent DREESEN	Q2	20	10	-	4
PHYS0939-2	<i>Physics of non-linearities, chaos and fractals</i> - Nicolas VANDEWALLE Corequisite :	Q2	15	15	-	4

	PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes							
PHYS3020-1	<i>Discrete element method and soft materials</i> - Eric OPSOMER - [15h Proj.]	Q2	20	-	[+]			4
PHYS1987-1	<i>Matière active</i> - Eric OPSOMER, Nicolas VANDEWALLE	Q2	30	-	-			4
Materials / Solid State								
PHYS3003-1	<i>Physics of functional oxides</i> (english language) - Philippe GHOSEZ Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q1	20	10	-			4
PHYS3023-1	<i>Physics of magnetic materials</i> (english language) - Eric BOUSQUET Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	20	10	-			4
PHYS0981-1	<i>Quantum modelling of materials properties</i> (english language) - Philippe GHOSEZ Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q1	20	10	-			4
PHYS0987-1	<i>Physics of materials for energy</i> (english language) - Ngoc Duy NGUYEN - [15h Proj.]	Q1	20	-	[+]			4
PHYS0988-1	<i>Intrinsic and induced topological properties of matter</i> (english language) - Bertrand DUPÉ	Q2	20	10	-			4
Quantum Physics and Relativity								
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	Q1	20	5	-			4
SPAT0012-1	<i>General relativity</i> (english language) - Guillaume MAHLER	Q1	30	10	-			4
Experimental Physics								
PHYS0250-2	<i>Experimental statistical physics</i> - Stéphane DORBOLO Corequisite : PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	Q2	10	20	-			4
PHYS3019-1	<i>Techniques of experimental physics</i> - Geoffroy LUMAY	Q2	20	20	-			4
PHYS0943-1	<i>Spectroscopy of electronic paramagnetic resonance</i> - Maryse HOEBEKE Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	15	15	-			4
PHYS0968-1	<i>Signal processing</i> - Alejandro SILHANEK - Suppl : Peter SCHLAGHECK	Q2	25	20	-			4
PHYS3037-1	<i>Nanofabrication : principles and techniques</i> (english language) - Ngoc Duy NGUYEN, Alejandro SILHANEK Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	25	20	-			5
PHYS0999-1	<i>Digital creation in sciences</i> - Roland BILLEN, Valentin FISCHER, JeanChristophe MONBALIU, Eric PARMENTIER, Michel RIGO, Nicolas VANDEWALLE - [30h Proj.]	TA	10	-	[+]			5
Optics and Imaging								
PHYS0942-3	<i>Ionising radiations and imaging</i> - Alain SERET	Q1	20	5	-			4
PHYS0938-1	<i>Physics and cultural heritage</i> - David STRIVAY	Q1	20	12	-			4
PHYS0048-2	<i>Coherent and incoherent optics</i> (english language) - <i>Coherent optics and lasers applications</i> - Serge HABRAKEN - <i>Laser physics</i> - Serge HABRAKEN	Q1		10 5	15 5	- -		4
PHYS0048-3	<i>Coherent and incoherent optics, Instrumental optics I</i> (english language) - Serge HABRAKEN	Q1	20	15	-			4
PHYS0128-1	<i>Magnetic Resonance Imaging - the Basics</i> (english language) - Laurent LAMALLE - [3d FW]	Q2	15	-	[+]			2

Applied physics

INFO0939-1	<i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ - [20h Proj.]	Q1	30	15	[+]	5
MECA0470-1	<i>New methods in computational mechanics and physics</i> (english language) - Maarten ARNST, Eric BÉCHET, Ludovic NOELS - [40h Proj.]	Q2	20	-	[+]	5
ELEN0062-1	<i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	6

Didactics

PHYS0979-1	<i>Conceptual approach to basic physics</i> - Hervé CAPS, Maryse HOEBEKE	Q1	30	-	-	4
AESS0241-1	<i>Introduction to physics didactics</i> - Maryse HOEBEKE	Q1	20	-	-	4
PHYS1988-1	<i>Projet de médiation scientifique</i> - Hervé CAPS	Q1	10	20	-	4

[...] Up to 20 credits (or more, in agreement with the Jury) in the two blocks may also be chosen in another study field or institution

Course Medical Physics

PHYS0952-3	<i>Imaging through ionising radiation</i> - Alain SERET Corequisite : PHYS0990-1 - Dosimétrie PHYS0989-1 - Radiobiology	Q1	25	5	-	4
PHYS0989-1	<i>Radiobiology</i> (english language) Corequisite : PHYS0990-1 - Dosimétrie PHYS0952-3 - Imagerie par radiations ionisantes	Q2	10	-	-	2
PHYS0990-1	<i>Dosimetry</i> - Véronique BAART, N... Corequisite : PHYS0989-1 - Radiobiology PHYS0952-3 - Imagerie par radiations ionisantes	Q2	20	-	-	3
RADI2001-1	<i>Radioprotection: hygiene problems</i> - Nadia WITHOFS Corequisite : PHYS0990-1 - Dosimétrie PHYS0989-1 - Radiobiology RADP0141-1 - Radioprotection BIOL0007-1 - Biologie tissulaire PHYS0952-3 - Imagerie par radiations ionisantes	Q1	15	-	-	2
BIOL0007-1	<i>Tissue biology</i> - N...	Q1	15	25	-	4
PHYL0644-1	<i>Human Anatomy and Physiology</i> - Valérie DEFAWEUX	Q2	30	-	-	3
ANAT0222-1	<i>Elements of Radiology</i> - Luaba TSHIBANDA, Christophe VALKENBORGH	Q2	10	5	-	2
CHIM0620-1	<i>Radiopharmaceutical Chemistry</i> - Thibault GENDRON	Q1	20	10	-	3
PHYS0128-1	<i>Magnetic Resonance Imaging - the Basics</i> (english language) - Laurent LAMALLE - [3d FW] Corequisite : PHYS0930-1 - Physique atomique	Q2	15	-	[+]	2
RADP0141-1	<i>Radioprotection</i> - Part a) <i>Radioprotection techniques and complements</i> - Véra PIRLET - Part b) <i>Legislation on radioprotection and the organisation of a radiotherapy, radiodiagnostic and nuclear medicine department</i> - Véra PIRLET	Q2	30 10	15 -	- -	6
SSTG0041-1	<i>Placement in medical radiophysics</i> - Véronique BAART, Claire BERNARD, Alain SERET - [12d Internship] Corequisite : PHYS0990-1 - Dosimétrie	Q2	2	-	[+]	7

	PHYS0989-1 - Radiobiology							
	PHYS0952-3 - Imagerie par radiations ionisantes							
STAT0420-1	<i>Biostatistics 2</i> - AnneFrançoise DONNEAU	Q1	15	15	-			3
	Corequisite :							
	PHYS0128-1 - Magnetic Resonance Imaging - the Basics							
PHYS0968-1	<i>Signal processing</i> - Alejandro SILHANEK - Suppl : Peter SCHLAGHECK	Q2	25	20	-			4

Only accessible to students enrolled in the Master's programme before the 2025-2026 academic year.

Block 2

Core curriculum compulsory course

SMEM0028-1	<i>Final thesis</i> - COLLÉGIALITÉ	TA	-	-	-			18
------------	------------------------------------	----	---	---	---	--	--	----

Common core courses

In agreement with the Jury, choose a subject among :

Basic course

PHYS0984-1	<i>Seminars in advanced physics II</i> (english language)	TA						4
	- <i>Materials physics and biophysics</i> - COLLÉGIALITÉ		10	-	-			
	- <i>Atomic physics</i> - COLLÉGIALITÉ		10	-	-			
	- <i>Physics of soft matter and complex systems</i> - COLLÉGIALITÉ		10	-	-			
	Prerequisite :							
	PHYS0983-1 - Séminaires de Physique avancée I							

Choisir en accord avec le Jury des cours non déjà choisis pour un total de 8 crédits parmi :

Atomic and nuclear

PHYS0932-1	<i>Cold atoms and atomic clocks</i> - Thierry BASTIN	Q2	20	10	-			4
	Corequisite :							
	PHYS0930-1 - Physique atomique							
PHYS2027-2	<i>Ultracold atoms and Bose-Einstein condensates</i> - Peter SCHLAGHECK	Q2	25	-	-			4
	Corequisite :							
	PHYS0930-1 - Physique atomique							
	PHYS3021-1 - Mécanique quantique avancée							
PHYS0235-2	(pas organisé en 2026-2027) <i>Quantum optics</i> - John MARTIN	Q2	20	10	-			4
	Corequisite :							
	PHYS0930-1 - Physique atomique							
	PHYS3021-1 - Mécanique quantique avancée							
PHYS0949-1	<i>Atomic structures modelling</i> - Pascal QUINET	Q2	10	10	-			4
	Corequisite :							
	PHYS0930-1 - Physique atomique							
PHYS0941-2	<i>Theoretical physics : Nuclei and particles</i> - JeanRené CUDELL	Q1	30	-	-			4
PHYS3021-1	<i>Advanced quantum mechanics</i> - Thierry BASTIN, John MARTIN, Peter SCHLAGHECK	Q1	30	-	-			4
PHYS0997-1	<i>Quantum information and computation</i> (english language) - François DAMANET	Q1	30	-	-			4
PHYS3136-1	<i>Open quantum systems</i> (english language) - François DAMANET, John MARTIN - [10h Proj.]	Q2	20	-	[+]			4
	Corequisite :							
	PHYS3021-1 - Mécanique quantique avancée							
	PHYS0235-2 - Optique quantique							
PHYS3138-1	<i>Nuclear physics: energy and materials</i> - David STRIVAY - [1d Vis.]	Q2	25	4	[+]			4

Soft Materials / Statistical Physics

PHYS0969-1	<i>Introduction to biophotonics</i> - Laurent DREESEN	Q2	20	10	-			4
------------	---	----	----	----	---	--	--	---

PHYS0939-2	<i>Physics of non-linearities, chaos and fractals</i> - Nicolas VANDEWALLE Corequisite : PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	Q2	15	15	-	4
PHYS3020-1	<i>Discrete element method and soft materials</i> - Eric OPSOMER - [15h Proj.]	Q2	20	-	[+]	4
PHYS1987-1	<i>Matière active</i> - Eric OPSOMER, Nicolas VANDEWALLE	Q2	30	-	-	4
PHYS0948-1	<i>Microgravity</i> - Nicolas VANDEWALLE - [3d FW] Corequisite : PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	Q2	10	20	[+]	4
Materials / Solid State						
PHYS3003-1	<i>Physics of functional oxides</i> (english language) - Philippe GHOSEZ Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q1	20	10	-	4
PHYS3023-1	<i>Physics of magnetic materials</i> (english language) - Eric BOUSQUET Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	20	10	-	4
PHYS0981-1	<i>Quantum modelling of materials properties</i> (english language) - Philippe GHOSEZ Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q1	20	10	-	4
PHYS0987-1	<i>Physics of materials for energy</i> (english language) - Ngoc Duy NGUYEN - [15h Proj.]	Q1	20	-	[+]	4
PHYS0988-1	<i>Intrinsic and induced topological properties of matter</i> (english language) - Bertrand DUPÉ	Q2	20	10	-	4
Quantum Physics and Relativity						
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	Q1	20	5	-	4
SPAT0012-1	<i>General relativity</i> (english language) - Guillaume MAHLER	Q1	30	10	-	4
Experimental Physics						
PHYS0250-2	<i>Experimental statistical physics</i> - Stéphane DORBOLO Corequisite : PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	Q2	10	20	-	4
PHYS3019-1	<i>Techniques of experimental physics</i> - Geoffroy LUMAY	Q2	20	20	-	4
PHYS0943-1	<i>Spectroscopy of electronic paramagnetic resonance</i> - Maryse HOEBEKE Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	15	15	-	4
PHYS0968-1	<i>Signal processing</i> - Alejandro SILHANEK - Suppl : Peter SCHLAGHECK	Q2	25	20	-	4
PHYS3037-1	<i>Nanofabrication : principles and techniques</i> (english language) - Ngoc Duy NGUYEN, Alejandro SILHANEK Corequisite : PHYS0974-1 - Physique des matériaux et biophysique	Q2	25	20	-	5
PHYS0999-1	<i>Digital creation in sciences</i> - Roland BILLEN, Valentin FISCHER, JeanChristophe MONBALIU, Eric PARMENTIER, Michel RIGO, Nicolas VANDEWALLE - [30h Proj.]	TA	10	-	[+]	5
Optics and Imaging						
PHYS0942-3	<i>Ionising radiations and imaging</i> - Alain SERET	Q1	20	5	-	4
PHYS0938-1	<i>Physics and cultural heritage</i> - David STRIVAY	Q1	20	12	-	4
PHYS0048-2	<i>Coherent and incoherent optics</i> (english language) - <i>Coherent optics and lasers applications</i> - Serge HABRAKEN	Q1	10	15	-	4

	- <i>Laser physics</i> - Serge HABRAKEN		5	5	-	
PHYS0048-3	<i>Coherent and incoherent optics, Instrumental optics I</i> (english language) - Serge HABRAKEN	Q1	20	15	-	4
PHYS0128-1	<i>Magnetic Resonance Imaging - the Basics</i> (english language) - Laurent LAMALLE - [3d FW]	Q2	15	-	[+]	2
PHYS0125-3	<i>Instrumental optics II</i> (english language) - Serge HABRAKEN Prerequisite : PHYS0048-3 - Coherent and incoherent optics	Q2	25	15	-	4

Applied physics

INFO0939-1	<i>High performance scientific computing</i> (english language) - Christophe GEUZAIN - [20h Proj.]	Q1	30	15	[+]	5
MECA0470-1	<i>New methods in computational mechanics and physics</i> (english language) - Maarten ARNST, Eric BÉCHET, Ludovic NOELS - [40h Proj.]	Q2	20	-	[+]	5
ELEN0062-1	<i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	Q1	30	5	[+]	6

Didactics

PHYS0979-1	<i>Conceptual approach to basic physics</i> - Hervé CAPS, Maryse HOEBEKE	Q1	30	-	-	4
AESS0241-1	<i>Introduction to physics didactics</i> - Maryse HOEBEKE	Q1	20	-	-	4
PHYS1988-1	<i>Projet de médiation scientifique</i> - Hervé CAPS	Q1	10	20	-	4

[...] Up to 20 credits (or more, in agreement with the Jury) in the two blocks may also be chosen in another study field or institution

Course Medical Physics

QUAL0722-1	<i>Safety and quality assurance</i> (english language) - Edmond STERPIN Prerequisite : SSTG0041-1 - Stages en radiophysique médicale	Q2	5	10	-	2
RADL0442-1	<i>Radiobiology and radiopathology elements</i> - Chantal HUMBLET Prerequisite : BIOL0007-1 - Biologie tissulaire PHYL0644-1 - Anatomie et physiologie humaines ANAT0222-1 - Eléments d'anatomie radiologique	Q1	40	20	-	6
PHYS3139-1	<i>Digital methods applied to medical physics</i> - Part A: 2D and 3D tomographical reconstruction - Alain SERET - Part B: Transfer and coregistration of medical images - Mohamed Ali BAHRI Prerequisite : PHYS0968-1 - Traitement du signal PHYS0952-3 - Imagerie par radiations ionisantes	Q1	10 15	- -	- -	2
CHIM0621-2	<i>Production and application of radioelements</i> - Thibault GENDRON - [3d FW]	Q2	15	-	[+]	2

Only accessible to students enrolled in the Master's programme before the 2025-2026 academic year.

Focus compulsory courses

AESS1222-1	<i>Special didactics in physics : course and exercises (1st part)</i> - Maryse HOEBEKE, PierreXavier MARIQUE Corequisite : PHYS0979-1 - Approche conceptuelle de la physique de base	Q1	40	-	-	3
AESS1223-1	<i>Special didactics in physics : placements (1st part)</i> - <i>Observation placements</i> - Maryse HOEBEKE, PierreXavier MARIQUE - [10h Internship] - <i>Teaching placements</i> - Maryse HOEBEKE, PierreXavier MARIQUE - [20h Internship]	Q1	-	-	[+]	3

	- <i>Reflexive practical work</i> - Maryse HOEBEKE, PierreXavier MARIQUE		-	5	-	
	Corequisite : PHYS0979-1 - Approche conceptuelle de la physique de base					
AESS2222-1	<i>Special didactics in physics : course and exercises (2nd part)</i> - Maryse HOEBEKE, PierreXavier MARIQUE	Q2	35	-	-	4
AESS2223-1	<i>Special didactics in physics : placements (2nd part)</i> - <i>Teaching placements</i> - Maryse HOEBEKE, PierreXavier MARIQUE - [20h Internship]	Q2				5
	- <i>Reflexive practical work</i> - Maryse HOEBEKE, PierreXavier MARIQUE			-	5	-
	- <i>Extra-scholar teaching activities</i> - Maryse HOEBEKE, PierreXavier MARIQUE			-	10	-
AESS0202-1	<i>General didactics: course and exercises ; observation placements ; reflexive practices</i> - Margaux NOIZET - [10h Internship]	TA	30	10	[+]	4
AESS0246-1	<i>Analysis of scholastic institutions and educational policies</i>	Q2	15	-	-	1
AESS0004-1	<i>Media education</i>	Q2	15	-	-	1
AESS0248-1	<i>Elements of sociology of education</i> - JeanFrançois GUILLAUME	Q2	10	-	-	1
AESS0140-1	<i>Professional ethics and training to neutrality and citizenship</i> - Anne HERLA	Q2	25	-	-	2
AESS0143-1	<i>Educational Psychology of adolescents and young adults</i>	Q1	15	-	-	2
AESS0249-1	<i>Interdisciplinary seminar</i>	Q2	15	-	-	1
AESS0339-1	<i>Understand and manage the diversity of public schools</i>	TA	10	15	-	3

Bloc d'aménagement du programme de l'année

Bridging courses (max 15-60 credits) Master in physics (120 credits)

Optional courses

The update course, worth a maximum of 60 credits, will be determined based on students' prior training.

[...] Between 15 and 60 ECTS of courses from "Bachelier en sciences physiques"