

#### Cycle view of the study programme

B1 Or Th Pr Au Cr

THIS MASTER IS ONLY ACCESSIBLE TO STUDENTS ENROLLED BEFORE THE 2022-2023 ACADEMIC YEAR.

#### Compulsory courses (B1 : 36Cr)

PHYS0974-1	<i>Materials physics and biophysics</i> - Maryse HOEBEKE, Alejandro SILHANEK	B1	Q1	30	-	-	5
PHYS0930-1	<i>Atomic physics</i> - Thierry BASTIN, Peter SCHLAGHECK	B1	Q1	30	-	-	5
PHYS0975-1	<i>Introduction to soft matter and complex systems</i> - Nicolas VANDEWALLE	B1	Q1	30	-	-	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	B1	TA	10	-	-	4
SMEM0027-1	<i>Final thesis</i> - COLLÉGIALITÉ	B1	TA	-	-	-	17

#### Optional courses (B1 : 24Cr)

In agreement with the jury, chose courses for a total of 24 credits from among: (B1 : 24Cr)

##### Atomic and nuclear

PHYS0932-1	<i>Cold atoms and atomic clocks</i> - Thierry BASTIN <b>Corequisite :</b> PHYS0930-1 - Physique atomique	B1	Q2	20	10	-	4
PHYS2027-2	<i>Ultracold atoms and Bose-Einstein condensates</i> - Peter SCHLAGHECK <b>Corequisite :</b> PHYS3021-1 - Mécanique quantique avancée PHYS0930-1 - Physique atomique	B1	Q2	25	-	-	4
PHYS0235-2	<i>Quantum optics</i> - John MARTIN <b>Corequisite :</b> PHYS0930-1 - Physique atomique PHYS3021-1 - Mécanique quantique avancée	B1	Q2	20	10	-	4
PHYS0949-1	<i>Atomic structures modelling</i> - Pascal QUINET <b>Corequisite :</b> PHYS0930-1 - Physique atomique	B1	Q2	10	10	-	4
PHYS0941-2	<i>Theoretical physics : Nuclei and particles</i> - JeanRené CUDELL	B1	Q1	30	-	-	4
PHYS3021-1	<i>Advanced quantum mechanics</i> - Thierry BASTIN, John MARTIN, Peter SCHLAGHECK	B1	Q1	30	-	-	4
PHYS0997-1	<i>Quantum information and computation</i> (english language) - François DAMANET	B1	Q1	30	-	-	4

##### Soft Materials / Statistical Physics

PHYS0969-1	<i>Introduction to biophotonics</i> - Laurent DREESEN	B1	Q2	20	10	-	4
PHYS0939-2	<i>Physics of non-linearities, chaos and fractals</i> - Nicolas VANDEWALLE <b>Corequisite :</b> PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	B1	Q2	15	15	-	4
PHYS3020-1	<i>Discrete element method and soft materials</i> - Eric OPSOMER	B1	Q2	15	15	-	4
PHYS0948-1	<i>Microgravity</i> - Nicolas VANDEWALLE - [3d FW] <b>Corequisite :</b> PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes	B1	Q2	10	20	[+]	4

##### Materials / Solid State

PHYS3003-1	<i>Physics of functional oxides</i> (english language) - Philippe GHOSEZ <b>Corequisite :</b>	B1	Q1	20	10	-	4
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	PHYS0974-1 - Physique des matériaux et biophysique								
PHYS0980-1	(pas organisé en 2023-2024) <i>Spectroscopy of materials</i> (english language)	B1	Q1	20	10	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
PHYS3004-1	<i>Physics of nanomaterials</i> (english language) - JeanYves RATY	B1	Q1	20	10	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
PHYS0982-1	<i>Physics of semiconductors</i> (english language) - Ngoc Duy NGUYEN	B1	Q1	15	-	-	-	-	2
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
PHYS3023-1	<i>Physics of magnetic materials</i> (english language) - Eric BOUSQUET	B1	Q2	20	10	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
PHYS0981-1	<i>Quantum modelling of materials properties</i> (english language) - Philippe GHOSEZ, Matthieu VERSTRAETE	B1	Q1	20	10	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
CHIM0202-2	<i>Physical Chemistry</i> - Christian DAMBLON, Bernard LEYH	B1	Q2	30	-	-	-	-	4
PHYS0987-1	<i>Physics of materials for energy</i> (english language) - Philippe GHOSEZ, Ngoc Duy NGUYEN	B1	Q1	30	-	-	-	-	4
PHYS0988-1	<i>Intrinsic and induced topological properties of matter</i> (english language) - Bertrand DUPÉ	B1	Q2	20	10	-	-	-	4

#### Quantum Physics and Relativity

PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	B1	Q1	20	5	-	-	-	4
SPAT0012-1	(pas organisé en 2023-2024) <i>General relativity</i> (english language) - Guillaume MAHLER	B1	Q1	30	10	-	-	-	4

#### Experimental Physics

PHYS0250-2	<i>Experimental statistical physics</i> - Stéphane DORBOLO	B1	Q2	10	20	-	-	-	4
	<b>Corequisite :</b> PHYS0975-1 - Introduction à la matière molle et aux systèmes complexes								
PHYS3019-1	<i>Techniques of experimental physics</i> - Geoffroy LUMAY	B1	Q2	20	20	-	-	-	4
PHYS0943-1	<i>Spectroscopy of electronic paramagnetic resonance</i> - Maryse HOEBEKE	B1	Q2	15	15	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								
PHYS0095-1	<i>The physics of accelerators and vacuum technologies</i> - David STRIVAY	B1	Q2	10	10	-	-	-	4
PHYS0931-1	<i>Data processing</i>	B1	Q2	15	30	-	-	-	4
PHYS3037-1	<i>Nanofabrication : principles and techniques</i> (english language) - Ngoc Duy NGUYEN, Alejandro SILHANEK	B1	Q2	25	15	-	-	-	4
	<b>Corequisite :</b> PHYS0974-1 - Physique des matériaux et biophysique								

#### Optics and Imaging

PHYS0942-3	<i>Ionising radiations and imaging</i> - Alain SERET	B1	Q1	20	5	-	-	-	4
PHYS0938-1	<i>Physics and cultural heritage</i> - David STRIVAY	B1	Q1	15	5	-	-	-	4
PHYS0048-2	<i>Coherent and incoherent optics</i> (english language) - <i>Coherent optics and lasers applications</i> - Serge HABRAKEN	B1	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	B1	Q1	20	15	-	4
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**Didactics**

PHYS0979-1	<i>Conceptual approach to basic physics</i> - Hervé CAPS, Maryse HOEBEKE	B1	Q1	30	-	-	4
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AESS0241-1	<i>Introduction to physics didactics</i> - Maryse HOEBEKE	B1	Q1	20	-	-	4
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[...] Up to 8 ECTS can be chosen in another study path or in another institution

**Additional ECTS (max 15-60) Master in physics (60 ECTS)****Optional courses (B0 : 60Cr)**

The update course, worth a maximum of 60 credits, will be determined based on students' prior training. (B0 : 60Cr)

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