

## First Year

### Compulsory courses

PHYS0240-2	<i>Biophysics</i> - Maryse HOEBEKE	30	15	-	<b>5</b>
PHYS0930-1	<i>Atomic Physics</i> - Thierry BASTIN	30	15	-	<b>5</b>
PHYS0931-1	<i>Data processing</i> - Pierre MAGAIN	15	30	-	<b>5</b>

### Optional courses

*Choose one option from the following :*

#### Fundamental 1 Option

SSTG0016-1	<i>Training course and personal homework</i> - COLLÉGIALITÉ	15	45	-	<b>6</b>
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Choose, with the approval of the Physics Board of Studies, courses totalling 24 credits, from :

PHYS0932-1	<i>Cold atoms and atomic clocks</i> - Thierry BASTIN	20	-	-	<b>3</b>
PHYS2027-1	<i>Ultracold atoms and Bose-Einstein condensates</i> - Peter SCHLAGHECK	30	-	-	<b>3</b>
AESS0241-1	<i>Introduction to physic didactics</i> - Maryse HOEBEKE	20	-	-	<b>3</b>
SPAT0012-2	<i>General relativity I, Part : Introduction</i> - Yves DE ROP	20	-	-	<b>3</b>
PHYS0933-1	<i>Magnetism and nanomagnetism (english language)</i> - Raphaël HERMANN	15	10	-	<b>3</b>
PHYS0934-1	<i>Coherent Optics and laser applications</i> - Serge HABRAKEN	15	20	-	<b>3</b>
PHYS0124-1	<i>Instrumental Optics I</i> - Serge HABRAKEN	20	15	-	<b>3</b>
PHYS0969-1	<i>Introduction to biophotonics</i> - Laurent DREESEN	20	10	-	<b>3</b>
PHYS0937-1	<i>Physical functional materials (english language)</i> - Philippe GHOSEZ	20	10	-	<b>3</b>
PHYS0938-1	<i>Physics and cultural heritage</i> - David STRIVAY	15	5	-	<b>3</b>
PHYS0939-2	<i>Physics of non-linearities, chaos and fractals</i> - Nicolas VANDEWALLE	15	15	-	<b>3</b>
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	20	5	-	<b>3</b>
PHYS0250-2	<i>Experimental statistical physics</i> - Stéphane DORBOLO	10	20	-	<b>3</b>
PHYS0941-2	<i>Nuclei and particles</i> - Jean-René CUDELL	30	-	-	<b>3</b>
PHYS0942-1	<i>Ionising radiations and imaging</i> - Alain SERET	15	5	-	<b>3</b>
PHYS0943-1	<i>Electronic paramagnetic resonance</i> - Maryse HOEBEKE	15	5	-	<b>3</b>
PHYS3012-2	<i>Electronic and vibrational spectroscopies</i> - Matthieu VERSTRAETE	15	15	-	<b>3</b>
PHYS0944-1	<i>Vacuum techniques</i> - David STRIVAY	10	10	-	<b>3</b>
CHIM0202-2	<i>Physical chemistry</i> - Christian DAMBLON, Bernard LEYH	30	-	-	<b>3</b>
SPAT0012-3	<i>General relativity I, Part : Complement</i> - Yves DE ROP	40	-	-	<b>3</b>
SPAT0047-1	<i>Quantum field theory</i> - Jean-René CUDELL	30	-	-	<b>3</b>
PHYS0945-1	<i>Complex fluids</i> - Nicolas VANDEWALLE	20	10	-	<b>3</b>
PHYS0235-1	<i>Introduction to quantum optics</i> - John MARTIN	30	-	-	<b>3</b>
PHYS0947-1	<i>Large Scale Facilities in Condensed Matter Physics (english language)</i> - Jean-Pierre GASPARD - [2d Vis.]	10	10	[+]	<b>3</b>
PHYS0948-1	<i>Microgravity</i> - Hervé CAPS, Nicolas VANDEWALLE - [3d FW]	10	20	[+]	<b>6</b>
PHYS0949-1	<i>Atomic structures modeling</i> - Pascal QUINET	10	10	-	<b>3</b>
PHYS0950-1	<i>Nanoparticles and low-dimensional systems (english language)</i> - Jean-Yves RATY	20	10	-	<b>3</b>
PHYS0125-3	<i>Instrumental Optics II</i> - Serge HABRAKEN	25	30	-	<b>6</b>
PHYS3017-1	<i>Physical science in an historical perspective</i> - Martine JAMINON - [1d Vis.]	30	-	[+]	<b>3</b>
PHYS3013-1	<i>Physical characterization of materials and interfaces</i> - Ngoc Duy NGUYEN	15	15	-	<b>3</b>
[...]	Up to 15 credits can be chosen in another study path or in another institution				

#### Option Medical Physics 1

PHYS0952-1	<i>Fundamental problems in physics related to radiology, radiotherapy and nuclear medicine</i>				<b>6</b>
	- part : radiobiology - Christophe CHAMPION	10	-	-	
	- part : dosimetry - Marie-Thérèse HOORNAERT	20	-	-	
	- part : medical imaging - Alain SERET	20	5	-	
RADP0141-1	<i>Radioprotection</i>				<b>5</b>
	- Part a) Radioprotection techniques and complements - Véra PIRLET	30	15	-	
	- Part b) Legislation on radioprotection and the organisation of a radiotherapy,	10	-	-	

	<i>radiodiagnostic and nuclear medicine department - Véra PIRLET</i>			
RADI2001-1	<i>Radioprotection : Hygiene problems - Roland HUSTINX</i>	15	-	- 2
BIOL0802-1	<i>Cell and Tissue Biology - Marc THIRY</i>	40	45	- 7
PHYL0644-1	<i>Human Anatomy and Physiology - Pierre BONNET</i>	30	-	- 3
ANAT0222-1	<i>Elements of Radiology - Paul MAGOTTEAUX, Paul MEUNIER, Mladen MILICEVIC, Bernard OTTO, Paolo SIMONI, Luaba TSHIBANDA</i>	10	5	- 2
STAT0722-1	<i>Introduction to medical statistics - Christophe PHILLIPS</i>	10	5	- 2
CHIM0620-1	<i>Radiopharmaceutical Chemistry - André LUXEN</i>	20	10	- 3

Choose a 2nd option among the following

#### Fundamental 2 Option

##### Requisite

##### "Option fondamentale 1"

Choose, in agreement with the Physics Board of Studies, courses totalling 15 credits

PHYS0932-1	<i>Cold atoms and atomic clocks - Thierry BASTIN</i>	20	-	- 3
PHYS2027-1	<i>Ultracold atoms and Bose-Einstein condensates - Peter SCHLAGHECK</i>	30	-	- 3
AESS0241-1	<i>Introduction to physic didactics - Maryse HOEBEKE</i>	20	-	- 3
SPAT0012-2	<i>General relativity I, Part : Introduction - Yves DE ROP</i>	20	-	- 3
PHYS0933-1	<i>Magnetism and nanomagnetism (english language) - Raphaël HERMANN</i>	15	10	- 3
PHYS0934-1	<i>Coherent Optics and laser applications - Serge HABRAKEN</i>	15	20	- 3
PHYS0124-1	<i>Instrumental Optics I - Serge HABRAKEN</i>	20	15	- 3
PHYS0969-1	<i>Introduction to biophotonics - Laurent DREESEN</i>	20	10	- 3
PHYS0937-1	<i>Physical functional materials (english language) - Philippe GHOSEZ</i>	20	10	- 3
PHYS0938-1	<i>Physics and cultural heritage - David STRIVAY</i>	15	5	- 3
PHYS0939-2	<i>Physics of non-linearities, chaos and fractals - Nicolas VANDEWALLE</i>	15	15	- 3
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics - Peter SCHLAGHECK</i>	20	5	- 3
PHYS0250-2	<i>Experimental statistical physics - Stéphane DORBOLO</i>	10	20	- 3
PHYS0941-2	<i>Nuclei and particles - Jean-René CUDELL</i>	30	-	- 3
PHYS0942-1	<i>Ionising radiations and imaging - Alain SERET</i>	15	5	- 3
PHYS0943-1	<i>Electronic paramagnetic resonance - Maryse HOEBEKE</i>	15	5	- 3
PHYS3012-2	<i>Electronic and vibrational spectroscopies - Matthieu VERSTRAETE</i>	15	15	- 3
PHYS0944-1	<i>Vacuum techniques - David STRIVAY</i>	10	10	- 3
CHIM0202-2	<i>Physical chemistry - Christian DAMBLON, Bernard LEYH</i>	30	-	- 3
SPAT0012-3	<i>General relativity I, Part : Complement - Yves DE ROP</i>	40	-	- 3
SPAT0047-1	<i>Quantum field theory - Jean-René CUDELL</i>	30	-	- 3
PHYS0945-1	<i>Complex fluids - Nicolas VANDEWALLE</i>	20	10	- 3
PHYS0235-1	<i>Introduction to quantum optics - John MARTIN</i>	30	-	- 3
PHYS0947-1	<i>Large Scale Facilities in Condensed Matter Physics (english language) - Jean-Pierre GASPARD - [2d Vis.]</i>	10	10	[+] 3
PHYS0948-1	<i>Microgravity - Hervé CAPS, Nicolas VANDEWALLE - [3d FW]</i>	10	20	[+] 6
PHYS0949-1	<i>Atomic structures modeling - Pascal QUINET</i>	10	10	- 3
PHYS0950-1	<i>Nanoparticles and low-dimensional systems (english language) - Jean-Yves RATY</i>	20	10	- 3
PHYS0125-3	<i>Instrumental Optics II - Serge HABRAKEN</i>	25	30	- 6
PHYS3017-1	<i>Physical science in an historical perspective - Martine JAMINON - [1d Vis.]</i>	30	-	[+] 3
PHYS3013-1	<i>Physical characterization of materials and interfaces - Ngoc Duy NGUYEN</i>	15	15	- 3
[...]	Up to 15 credits can be chosen in another study path or in another institution			

#### Option Medical Physics 2

##### Requisite

##### "Option physique médicale 1"

SSTG0017-2	<i>Training in nuclear medicine - Claire BERNARD, Alain SERET - [1w Internship]</i>	-	-	[+] 4
SSTG0018-2	<i>Training in radiology - Françoise MALCHAIR - [1w Internship]</i>	-	-	[+] 4
SSTG0019-2	<i>Training in radiotherapy - Marie-Thérèse HOORNAERT - [1w Internship]</i>	-	-	[+] 4
PHYS0128-1	<i>Magnetic Resonance Imaging - the Basics (english language) - Evelyne BALTEAU - [3d FW]</i>	15	-	[+] 3

## Second Year

### Compulsory course

SMEM0028-1 *Final thesis* - COLLÉGIALITÉ - - - 15

**Optional courses**

*Choose one option from the following :*

**Fundamental 3 Option**

Prerequisite "Option fondamentale 2"

With the approval of the Board of Studies in Physics, choose courses not chosen in the 1st year totaling 15 credits :

PHYS0932-1	<i>Cold atoms and atomic clocks</i> - Thierry BASTIN	20	-	-	3
PHYS2027-1	<i>Ultracold atoms and Bose-Einstein condensates</i> - Peter SCHLAGHECK	30	-	-	3
AESS0241-1	<i>Introduction to physic didactics</i> - Maryse HOEBEKE	20	-	-	3
SPAT0012-2	<i>General relativity I, Part : Introduction</i> - Yves DE ROP	20	-	-	3
PHYS0933-1	<i>Magnetism and nanomagnetism</i> (english language) - Raphaël HERMANN	15	10	-	3
PHYS0934-1	<i>Coherent Optics and laser applications</i> - Serge HABRAKEN	15	20	-	3
PHYS0124-1	<i>Instrumental Optics I</i> - Serge HABRAKEN	20	15	-	3
PHYS0969-1	<i>Introduction to biophotonics</i> - Laurent DREESEN	20	10	-	3
PHYS0937-1	<i>Physical functional materials</i> (english language) - Philippe GHOSEZ	20	10	-	3
PHYS0938-1	<i>Physics and cultural heritage</i> - David STRIVAY	15	5	-	3
PHYS0939-2	<i>Physics of non-linearities, chaos and fractals</i> - Nicolas VANDEWALLE	15	15	-	3
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	20	5	-	3
PHYS2050-2	<i>Experimental statistical physics</i> - Stéphane DORBOLO	10	20	-	3
PHYS0941-2	<i>Nuclei and particles</i> - Jean-René CUDELL	30	-	-	3
PHYS0942-1	<i>Ionising radiations and imaging</i> - Alain SERET	15	5	-	3
PHYS0943-1	<i>Electronic paramagnetic resonance</i> - Maryse HOEBEKE	15	5	-	3
PHYS3012-2	<i>Electronic and vibrational spectroscopies</i> - Matthieu VERSTRAETE	15	15	-	3
PHYS0944-1	<i>Vacuum techniques</i> - David STRIVAY	10	10	-	3
CHIM0202-2	<i>Physical chemistry</i> - Christian DAMBLON, Bernard LEYH	30	-	-	3
SPAT0012-3	<i>General relativity I, Part : Complement</i> - Yves DE ROP	40	-	-	3
SPAT0047-1	<i>Quantum field theory</i> - Jean-René CUDELL	30	-	-	3
PHYS0945-1	<i>Complex fluids</i> - Nicolas VANDEWALLE	20	10	-	3
PHYS0235-1	<i>Introduction to quantum optics</i> - John MARTIN	30	-	-	3
PHYS0947-1	<i>Large Scale Facilities in Condensed Matter Physics</i> (english language) - Jean-Pierre GASPARD - [2d Vis.]	10	10	[+]	3
PHYS0948-1	<i>Microgravity</i> - Hervé CAPS, Nicolas VANDEWALLE - [3d FW]	10	20	[+]	6
PHYS0949-1	<i>Atomic structures modeling</i> - Pascal QUINET	10	10	-	3
PHYS0950-1	<i>Nanoparticles and low-dimensional systems</i> (english language) - Jean-Yves RATY	20	10	-	3
PHYS0125-3	<i>Instrumental Optics II</i> - Serge HABRAKEN	25	30	-	6
PHYS3017-1	<i>Physical science in an historical perspective</i> - Martine JAMINON - [1d Vis.]	30	-	[+]	3
PHYS3013-1	<i>Physical characterization of materials and interfaces</i> - Ngoc Duy NGUYEN	15	15	-	3
[...]	Up to 15 credits can be chosen in another study path or in another institution.				

**Option: Medical Physics 3**

Prerequisite "Option Physique médicale 2"

QUAL0722-1	<i>Safety and quality assurance</i> - Eric LENAERTS	5	10	-	2
RADL0442-1	<i>Radiobiology and radiopathologie elements</i> - Chantal HUMBLET, Philippe MARTINIVE	40	20	-	6
PHYS2024-1	<i>Transfer and co-registration of medical images</i> - Mohamed Ali BAHRI	15	-	-	2
PHYS2025-1	<i>Fundamental problems of physics relating to medical radiodiagnosics, radiotherapy and nuclear medicine : internal dosimetry of radiopharmaceutical compounds</i> (english language) - Klaus BACHER	15	-	-	2
CHIM0621-2	<i>Production and application of radioelements</i> - André LUXEN - [3d FW]	15	-	[+]	3

**Compulsory courses**

STRA0030-1	<i>Complement of final thesis</i> - COLLÉGIALITÉ	-	-	-	12
PHYS0963-1	<i>Seminars</i> - COLLÉGIALITÉ	-	-	-	3

**Optional courses**

[...] With the approval of the Board of Studies in Physics, choose from the courses

Study programmes 2010-2011

Faculty of Sciences

Master in Physical Sciences, in-depth approach

programme of the ULg additional courses, not previously followed, totaling 15 credits