

First Year

Compulsory courses

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|------------|---|------|----|---|----------|
| MATH0228-1 | <i>Advanced Mathematics</i> (english) | 30 | 30 | - | 6 |
| STAT0202-1 | <i>Statistics and processing of experimental physics data - processing of experimental physics data</i> | 22,5 | 15 | - | 3 |
| STAT0204-1 | <i>Statistics and processing experimental physics data - statistics</i> | 22,5 | 15 | - | 3 |
| PHYS0211-1 | <i>Quantum Mechanics</i> - Joseph CUGNON | 45 | 30 | - | 6 |
| CHIM0202-1 | <i>Physical chemistry</i> - Bernard LEYH | 20 | 40 | - | 6 |
| PHYS0210-1 | <i>Advanced General Physics partim : electronics - acquiring and processing information</i> | 30 | 45 | - | 6 |
| MECA0203-2 | <i>Continuum Mechanics</i> - Pierre DAUBY | 30 | 15 | - | 5 |

Study Path course

Students are asked to follow in the 1st license 5 courses from the Study Paths they want to take in the 2nd license. The two courses not taken in the 1st license will be taken in the 2nd license.

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|--|---|----|----|-----|----------|
| 1.01 Basic Theoretical Physics | | | | | |
| PHYS0214-1 | <i>Noyaux et particules</i> - Jean-René CUDELL | 30 | 15 | - | 5 |
| 1.02 Nuclear, Spectroscopic and Atomic Physics | | | | | |
| PHYS0213-1 | <i>Electrons, atoms and molecules</i> - Thierry BASTIN | 30 | 15 | - | 5 |
| 1.03 Material Physics | | | | | |
| PHYS0215-1 | <i>Etats condensés</i> | 30 | 15 | - | 5 |
| 1.04 Statistical Physics | | | | | |
| PHYS0212-1 | <i>Statistical physics</i> - Nicolas VANDEWALLE | 30 | 15 | - | 5 |
| 1.05 Biomedical Physics | | | | | |
| PHYS0216-1 | <i>Physique biologique</i> | 30 | 15 | - | 5 |
| 1.06 Astrophysics | | | | | |
| ASTR0205-2 | <i>Astrophysique générale</i> - Jean SURDEJ - [5d Peda. Tr.] | 30 | - | [+] | 5 |
| 1.07 Geophysics | | | | | |
| SPAT0048-1 | <i>Physics of the earth's atmosphere and environment</i> - Jean-Claude GÉRARD | 30 | 15 | - | 5 |

Second Year

Compulsory courses

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|------------|---|----|----|---|----------|
| PHYS0219-1 | <i>Experimental Physics Laboratories</i> - Henri-Pierre GARNIR, Fernande GRANDJEAN, Serge HABRAKEN, Maryse HOEBEKE, Yves LION, Nicolas VANDEWALLE | - | 45 | - | 5 |
| PHYS0221-1 | <i>Advanced Theoretical Physics</i> | | | | 5 |
| | - <i>Advanced Quantum Mechanics</i> - Jean-Pierre GASPARD | 15 | - | - | |
| | - <i>Quantum Field Theory</i> - Joseph CUGNON | 15 | - | - | |
| | - <i>Relativity and Cosmology</i> - Yves DE ROP | 15 | - | - | |

Students must take the two Study Path courses not taken in the first year. These courses count for 10 ECTS and are 90h in total.

Optional Study Path courses

Choose a group of courses from below according to the subject of your dissertation. These courses make up 90h and count for 10 ECTS.

Basic Theoretical Physics

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|------------|--|----|---|---|---|
| PHYS0225-1 | <i>Theoretical physics, part I: fields</i> - Jean-René CUDELL | 30 | - | - | - |
| PHYS0222-1 | <i>Theoretical Physics, part II: Group Theory</i> (english) - Floarea STANCU | 30 | - | - | - |
| PHYS0228-1 | <i>Theoretical physics, part III: particles</i> - Pierre STASSART | 30 | - | - | - |

Nuclear, Spectroscopic and Atomic Physics

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|------------|--|----|---|---|---|
| PHYS0239-1 | <i>Spectroscopy II</i> - Thierry BASTIN, Henri-Pierre GARNIR, Pascal QUINET, David STRIVAY | 45 | - | - | - |
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| PHYS0217-1 | <i>Nuclear physics and radiation detection</i> - N... - [3d Vis.] | 30 | 15 | [+] | - |
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Material Physics

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|------------|---|----|---|---|---|
| PHYS0244-3 | <i>Physical optics</i> - Serge HABRAKEN | 30 | - | - | - |
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Notice : 5 Days of Visits (optional)

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|----------------------------|---|----|----|---|---|
| PHYS0251-1 | <i>Advanced Condensed Matter Physics</i> - Jean-Pierre GASPARD, Philippe GHOSEZ, Fernande GRANDJEAN, Marcel SCHMEITS | 60 | - | - | - |
| Statistical Physics | | | | | |
| PHYS0227-1 | <i>complements in statistical physics</i> - Marcel AUSLOOS | 30 | - | - | - |
| PHYS0234-1 | <i>Introduction to fractals and chaos</i> - Marcel AUSLOOS | 30 | - | - | - |
| PHYS0250-1 | <i>Experimental statistical physics</i> - Stéphane DORBOLO | 30 | - | - | - |
| Biomedical Physics | | | | | |
| BIOL0211-1 | <i>Biology</i> - Catherine SADZOT | 45 | - | - | - |
| PHYS0240-1 | <i>Biophysics</i> - Maryse HOEBEKE | 30 | - | - | - |
| PHYS0226-1 | <i>Image processing</i> - Pierre MAGAIN | 15 | - | - | - |
| Astrophysics | | | | | |
| ASTR0210-1 | <i>Observation in astrophysics</i> - Pierre MAGAIN | 30 | - | - | - |
| ASTR0206-1 | <i>Evolution and stability of stars</i> - Arlette NOELS#GRÖTSCH | 30 | - | - | - |
| MECA0205-1 | <i>Cosmology</i> - Yves DE ROP | 30 | - | - | - |
| Geophysics | | | | | |
| ASTR0209-1 | <i>Geophysics of space and global changes</i> - Jean-Claude GÉRARD | 15 | 15 | - | - |
| ESHY0070-3 | <i>Dynamics of lower atmospherical layers and air-sea interactions</i> - Louis FRANÇOIS | 30 | - | - | - |
| MECA0053-6 | <i>Geophysical fluid dynamics</i> - Jean-Marie BECKERS | 30 | - | - | - |

Option cours

Students choose 60h of courses from the list below, Study Path courses and courses in other programmes, including programmes in other Faculties (6 ECTS).

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|------------|--|----|----|---|-----------|
| ASTR0211-1 | <i>Applied optics</i> - Serge HABRAKEN | 30 | 30 | - | - |
| ELEC0201-1 | <i>Electronics - additional issues</i> - Henri-Pierre GARNIR | 45 | - | - | - |
| PHYS0231-1 | <i>An Approach to Chaotic Phenomena</i> - Pierre DAUBY | 30 | - | - | - |
| PHYS0232-1 | <i>Further Applied Computing</i> - Henri-Pierre GARNIR | 30 | - | - | - |
| PHYS0235-1 | <i>Quantum optics</i> - Thierry BASTIN | 30 | - | - | - |
| PHYS0236-1 | <i>Lasers in physics and applications</i> - Serge HABRAKEN | 10 | 5 | - | - |
| PHYS0040-1 | <i>Irreversible Thermodynamics</i> - Pierre DAUBY | 30 | - | - | - |
| SMEM0005-1 | <i>Mémoire</i> | - | - | - | 24 |

Les objectifs du mémoire sont, dans l'ordre d'importance décroissante :

- * l'étude d'une matière approfondie,
- * la rédaction d'une synthèse originale,
- * un travail de recherche original.

Le mémoire sera présenté en séance publique devant le Jury.