

## Third Year

### Obligations common to the 3 Study Paths

[...]	One General Education course, chosen from the University programme, and approved by the President of the Board of Studies.	-	-	-	<b>24</b>
ATFE0001-1	<i>Final work</i> - COLLÉGIALITÉ	-	-	-	<b>24</b>
To choose :					
ASTG0010-1	<i>Placement</i> - N...	-	-	-	<b>12</b>
[...]	One or more courses totalling 12 ECTS from "ingénieur civil physicien"	-	-	-	

### Pursuing the field begun in year 2

#### A. Field Continuous Environments

Students must choose from the following list or the option course list a combination of courses totalling 21 ECTS.

ESHY0070-1	<i>Dynamics of lower atmospherical layers and air-sea interactions</i> - Louis FRANÇOIS	30	15	-	<b>4</b>
MECA0031-2	<i>Kinematics and Dynamics of Mechanisms</i> - Olivier BRULS	30	30	-	<b>6</b>
MECA0053-2	<i>Geophysical fluid dynamics (part 2)</i> - Jean-Marie BECKERS	15	15	-	<b>3</b>
MECA0055-1	<i>Numerical methods applied to the environment</i> - Jean-Marie BECKERS	30	30	-	<b>6</b>
MECA0058-1	<i>Fracture mechanics, damage and fatigue</i> - Ludovic NOELS	30	30	-	<b>6</b>
MECA0471-1	<i>Finite volumes and fluid dynamics</i> - Jean-André ESSERS	30	30	-	<b>5</b>
MECA0097-1	<i>Digital Methods in Fluid Dynamics</i> - Jean-André ESSERS	15	15	-	<b>3</b>
MECA0137-1	<i>Non-Newtonian Fluid Mechanics</i> - N... - Suppl : Benoît DEBBAUT, Jean-Marie MARCHAL	30	30	-	<b>6</b>
[...]	Courses from "Liste des cours à option"				

#### B. Field Spatial Techniques

Students must choose from the following list or the option course list a combination of courses totalling 21 ECTS.

ELEN0017-1	<i>Analysis and Design of Telecommunications Systems</i> - Marc VAN DROOGENBROECK	30	30	-	<b>6</b>
AERO0018-1	<i>Space Experiment Development</i> - Pierre ROCHUS	15	15	-	<b>3</b>
ASTR0007-2	<i>Spacial systems for observing the earth</i> - Christian BARBIER	20	-	-	<b>2</b>
SPAT0039-1	<i>Spectroscopy in Astrophysics and Geophysics</i> - Jérôme LOICQ	20	10	-	<b>3</b>
SPAT0001-1	<i>Plasma Physics</i> - Hervé LAMY, Anne THOUL	25	5	-	<b>3</b>
SPAT0021-1	<i>Introduction to astroparticles</i> - Jean-René CUDELL, Joseph CUGNON	20	10	-	<b>3</b>
SPAT0035-1	<i>Space exploration</i> - Grégor RAUW	30	10	-	<b>4</b>
SPAT0036-1	<i>Celestial mechanics and space trajectories</i> - Grégor RAUW	20	10	-	<b>3</b>
[...]	Courses from "Liste des cours à option"				

#### C. Field Condensed Matter Physics -optoelectronics

Students must also choose from the following list and the option courses list courses totalling 21 ECTS.

PHYS0058-1	<i>Interactions between radiation and matter</i> - Joseph CUGNON	30	30	-	<b>6</b>
PHYS0046-2	<i>Quantum physics and applications to Condensed Matter</i> - Jean-Pierre GASPARD	30	30	-	<b>6</b>
ELEN0069-1	<i>Nanoelectronics / Optoelectronics</i> - Benoît VANDERHEYDEN	30	30	-	<b>6,5</b>
PHYS0236-2	<i>Lasers in physics and applications</i> - Serge HABRAKEN	30	30	-	<b>6</b>
PHYS0937-1	<i>Physical functional materials (English)</i> - Philippe GHOSEZ	20	10	-	<b>3</b>
PHYS0950-1	<i>Nanoparticles and low-dimensional systems (English)</i> - Jean-Yves RATY	20	10	-	<b>3</b>
[...]	Courses from "Liste des cours à option"				

### Optional courses

#### Option course list

MATH0049-1	<i>Morphological Characterization of Unordered Systems</i> - Silvia BLACHER	30	30	-	<b>6</b>
MECA0062-1	<i>Vibration Testing and Experimental Modal Analysis</i> - Jean-Claude GOLINVAL	30	30	-	<b>6</b>
MECA0090-1	<i>Composite Structure Design (Fiber reinforced)</i> - Claude FLEURY	20	10	-	<b>3</b>
MECA0464-1	<i>Large deformation of solids</i> - Jean-Philippe PONTHOT	30	30	-	<b>5</b>

PHYS0221-2	<i>Advanced Theoretical Physics, Relativity and Cosmology</i> - Yves DE ROP	15	-	-	<b>2</b>
SPAT0046-1	<i>Symmetries in Particle Astrophysics</i> - Floarea STANCU	30	-	-	<b>3</b>
PHYS0231-2	<i>An Approach to Chaotic Phenomena</i> - Pierre DAUBY	20	10	-	<b>3</b>
SYST0017-1	<i>Non linear systems</i> - Rodolphe SEPULCHRE	30	30	-	<b>6</b>
GEST1069-1	<i>Introduction to entrepreneurship</i> - Bernard SURLEMONT	30	-	-	<b>3</b>
ECON0878-1	<i>Microeconomy applied to the engineering science</i> - Jean-Pierre HANSEN	30	-	-	<b>3</b>
ECON0099-1	<i>Industrial strategy: economic case analysis</i> - Jean-Pierre HANSEN	30	-	-	<b>3</b>
[...]	Students can, with the approval of the President of the Board of Studies, choose 6 ECTS from the University of Liège programme.				