

#### Cycle view of the study programme

		B1	Or	Th	Pr	Au	Cr
<b>Compulsory courses (B2 : 27Cr)</b>							
SMEM0029-1	<i>Final thesis</i> - COLLÉGIALITÉ	B2	TA	-	-	-	15
SPAT0070-1	<i>Final thesis complement</i> - COLLÉGIALITÉ	B2	TA	-	-	-	12
<b>Optional courses (B1 : 60Cr, B2 : 33Cr)</b>							
Select, in agreement with the Jury, courses totalling 63 ECTS from the lists below, including at least one of these first two courses of each list : (B1 : 60Cr, B2 : 3Cr)							
<b>Space sciences : interdisciplinary courses</b>							
SPAT0017-1	<i>Seminars on topical issues</i> (english language) - JeanRené CUDELL, Maxime FAYS, Benoît HUBERT, Damien HUTSEMEKERS, Charles TROUPIN	B1	TA	-	30	-	3
SPAT0035-1	<i>Space exploration</i> (english language) - Grégor RAUW	B1	Q1	30	10	-	4
SPAT0001-1	<i>Plasma physics</i> (english language) - Benoît HUBERT	B1	Q2	25	5	-	4
SPAT0018-1	<i>Ideas evolution in astronomy</i> - Yaël NAZÉ	B1	Q1	14	6	-	2
SPAT0036-1	<i>Celestial mechanics and space trajectories</i> (english language) - Grégor RAUW	B1	Q1	25	10	-	4
SPAT0039-1	<i>Spectroscopy in astrophysics and geophysics</i> (english language) - N...	B1	Q1	20	10	-	3
SPAT0040-1	<i>Fluid mechanics</i> (english language) - Pierre DAUBY	B1	Q1	20	10	-	4
<b>Cosmology and astroparticle</b>							
SPAT0021-1	<i>Introduction to astroparticles</i> (english language) - JeanRené CUDELL	B1	Q2	30	-	-	3
SPAT0012-1	(pas organisé en 2022-2023) <i>General relativity, Part 1: Introduction</i> - N...	B1	Q1	20	-	-	3
SPAT0010-1	<i>Theoretical physical cosmology</i> (english language) - Pierre MAGAIN	B1	Q2	40	-	-	4
SPAT0012-2	(pas organisé en 2022-2023) <i>General relativity, Part 2: Mathematics methods</i> - N... <b>Corequisite :</b> SPAT0012-1 - Relativité générale	B1	Q1	20	-	-	2
SPAT0012-3	(pas organisé en 2022-2023) <i>General relativity, Part 3: supplement</i> - N... <b>Corequisite :</b> SPAT0012-2 - Relativité générale	B1	Q2	20	-	-	2
SPAT0160-1	<i>Particles ans astroparticles</i> (english language) - JeanRené CUDELL <b>Corequisite :</b> SPAT0162-1 - Quantum field theory	B1	Q2	20	10	-	4
SPAT0260-1	<i>Particles and gravitation</i> (english language) - JeanRené CUDELL <b>Corequisite :</b> SPAT0162-1 - Quantum field theory	B1	Q2	10	5	-	2
SPAT0162-1	<i>Quantum field theory</i> (english language) - JeanRené CUDELL <b>Corequisite :</b> SPAT0012-1 - Relativité générale	B1	Q1	20	10	-	4
PHYS2012-1	<i>Relativistic quantum mechanics and relativistic statistics</i> - Peter SCHLAGHECK	B1	Q1	20	5	-	3
SPAT0075-1	<i>Gravitational waves</i> (english language) - Maxime FAYS <b>Corequisite :</b> SPAT0012-3 - Relativité générale SPAT0012-2 - Relativité générale SPAT0012-1 - Relativité générale	B1	Q1	10	5	-	2

#### Astrophysics

SPAT0033-1	<i>Astrophysics</i> (english language) - Pierre MAGAIN	B1	Q1	35	15	-	5
SPAT0044-1	<i>Stellar structure and evolution I</i> (english language) - MarcAntoine DUPRET	B1	Q1	35	-	-	3
SPAT0005-1	<i>Stellar stability and asteroseismology</i> (english language) - MarcAntoine DUPRET <b>Corequisite :</b> SPAT0040-1 - Fluid mechanics SPAT0044-1 - Stellar structure and evolution I	B1	Q2	30	10	-	4
SPAT0006-1	<i>Stellar atmospheres</i> (english language) - Grégor RAUW <b>Corequisite :</b> SPAT0039-1 - Spectroscopy in astrophysics and geophysics	B1	Q2	20	10	-	3
SPAT0007-2	<i>Variable stars</i> (english language) - Grégor RAUW	B1	Q1	20	10	-	3
SPAT0008-1	<i>Interstellar medium</i> (english language) - Michaël DE BECKER, Valérie VAN GROOTEL	B1	Q1	30	10	-	4
SPAT0009-1	<i>High-energy astrophysics</i> (english language) - Grégor RAUW	B1	Q1	25	5	-	3
SPAT0011-1	<i>Extragalactic astrophysics</i> (english language) - Pierre MAGAIN <b>Corequisite :</b> SPAT0033-1 - Astrophysics	B1	Q1	20	10	-	3
SPAT0020-2	<i>Astrochemistry</i> (english language) - Michaël DE BECKER	B1	Q1	30	10	-	4
SPAT0045-1	<i>Stellar structure and evolution II</i> (english language) - MarcAntoine DUPRET <b>Corequisite :</b> SPAT0044-1 - Stellar structure and evolution I	B1	Q2	20	20	-	3
SPAT0069-1	<i>Radio astrophysics</i> (english language) - Michaël DE BECKER	B1	Q2	25	10	-	4

#### Planetary science and planetary systems

SPAT0055-1	<i>Atmosphere of the Earth</i> (english language) - Denis GRODENT	B1	Q1	45	-	-	4
SPAT0063-1	<i>Introduction to exoplanetology</i> (english language) - Olivier ABSIL, Michaël GILLON <b>Corequisite :</b> SPAT0033-1 - Astrophysics	B1	Q2	20	10	-	4
SPAT0023-1	<i>Terrestrial magnetosphere and polar lights</i> (english language) - Benoît HUBERT	B1	Q2	30	10	-	4
SPAT0028-2	<i>Planetary magnetospheres and aurorae</i> (english language) - Bertrand BONFOND, Denis GRODENT	B1	Q2	20	10	-	3
SPAT0029-1	<i>Space environment</i> (english language) - Denis GRODENT	B1	Q1	15	15	-	3
SPAT0043-1	<i>The small bodies of the solar system</i> (english language) - Emmanuel JEHIN - Suppl : Bertrand BONFOND	B1	Q2	15	5	-	3
SPAT0056-1	<i>Planetary and exoplanetary atmospheres</i> (english language) - Denis GRODENT <b>Corequisite :</b> SPAT0055-1 - Atmosphere of the Earth	B1	Q2	30	15	-	5
GEOL0263-1	<i>Astrobiology</i> (english language) - Vincianne DEBAILLE, Véronique DEHANT, Emmanuelle JAVAUX, Yaël NAZÉ, Annick WILMOTTE	B1	Q2	45	-	-	5
GEOL0304-1	<i>Introduction to neotectonics, seismology and physical volcanology</i> (english language) - Clara BRERETON, HansBalder HAVENITH - [2d FW]	B1	Q1	25	15	[+]	5
SPAT0066-1	<i>Internal geophysics of the Earth and terrestrial bodies of the solar system</i> (english language) - Véronique DEHANT	B1	Q1	25	-	-	2

#### Climate, environment and oceanography

SPAT0027-3	<i>Climate change and impacts</i> (english language) - Louis FRANÇOIS, Guy MUNHOVEN	B1	TA	30	30	-	5
OCEA0071-1	<i>Geophysical fluid dynamics - part 1</i> (english language) - JeanMarie BECKERS	B1	Q2	30	15	-	6
SPAT0024-2	<i>Meteorology</i> (english language) - Part 1 - Louis FRANÇOIS - Part 2 - Louis FRANÇOIS	B1	Q1	20	10	-	6
SPAT0025-1	<i>Climate and environmental modelling</i> (english language) - Louis FRANÇOIS, Guy MUNHOVEN	B1	Q2	30	15	-	4
SPAT0026-1	<i>Paleoenvironment and evolution of the Earth system</i> (english language) - Louis FRANÇOIS	B1	Q2	30	10	-	4
SPAT0032-2	<i>Remote sensing</i> (english language) - François JONARD	B1	Q1	20	20	-	5
GEOG0037-1	<i>Global Navigation Satellite Systems</i> - René WARNANT	B1	Q1	40	15	-	5
GEOG0038-1	<i>GNSS data processing</i> - René WARNANT <b>Corequisite :</b> GEOG0037-1 - Global Navigation Satellite Systems	B1	Q1	25	30	-	5
OCEA0045-1	<i>Statistical methods of analysis of oceanographic data</i> (english language) - N...	B1	Q1	20	10	-	3
OCEA0087-1	<i>Satellite oceanography</i> (english language) - Aida ALVERA AZCARATE	B1	Q1	15	15	-	3
OCEA0072-1	<i>Geophysical fluid dynamics - part 2</i> (english language) - JeanMarie BECKERS <b>Corequisite :</b> OCEA0071-1 - Geophysical fluid dynamics - part 1	B1	Q1	30	15	-	5
OCEA0081-1	<i>Numerical Methods in Geophysics - Part 2</i> (english language) - JeanMarie BECKERS	B1	Q1	15	30	-	5

#### Instrumentation and methods for space sciences

SPAT0068-1	<i>Astrophysical observations</i> (english language) - Emmanuel JEHIN - Suppl : Laetitia DELREZ - [5d FW]	B1	Q2	15	15	[+]	6
SPAT0002-1	<i>Programming techniques, numerical methods and machine learning</i> (english language) - Dominique SLUSE	B1	Q1	15	15	-	3
PHYS0048-3	<i>Coherent and incoherent optics, Instrumental optics I</i> (english language) - Serge HABRAKEN	B1	Q1	20	15	-	4
SPAT0014-1	<i>Introduction to time series analysis</i> (english language) - N...	B1	Q2	20	15	-	4
SPAT0015-1	<i>Signal acquisition and processing : application to embedded systems</i> - Christian SERVAIS (Even years)	B1	Q2	10	30	-	4
AERO0018-3	<i>Space experiment development</i> (english language) - Denis GRODENT, Jérôme LOICQ	B1	Q2	26	26	-	5
PHYS0125-3	<i>Instrumental optics II</i> (english language) - Serge HABRAKEN <b>Corequisite :</b> PHYS0048-3 - Coherent and incoherent optics	B1	Q2	25	15	-	4
PHYS0931-1	<i>Data processing</i> - Pierre MAGAIN	B1	Q2	15	30	-	4
SPAT0067-1	<i>Atmospheric and adaptive optics</i> (english language) - Olivier ABSIL	B1	Q2	15	5	-	2
SPAT0262-1	<i>Gravitational wave data analysis with Python</i> (english language) - Maxime FAYS	B1	Q2	-	15	-	2

[...] In agreement with the jury, chose a course that hasn't already been chosen worth 3 credits from the lists offered in Block 1

# Study programmes 2022-2023

## Faculty of Sciences

### Master in space sciences (120 ECTS)

Choose one focus from the following : (B2 : 1Nbr)

#### Research Focus (B2 : 30Cr)

Choose courses totalling 30 ECTS out of the following : (B2 : 30Cr)

[...] Choose courses not already chosen for a total of 30 credits from the ULiège Faculty of Science or Applied Science course programme (including the ULiège Master of Civil Engineering in Aerospace programme), from the list below and/or from another institution's course programme. These choices must be backed up by a coherent choice of curriculum, approved by the Jury

SSTG0043-1	<i>Placement</i> - Marc GEORGES, Yaël NAZÉ, Grégor RAUW	B2	TA	-	140	-	<b>10</b>
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#### Professional Focus (B2 : 30Cr)

##### Compulsory courses (B2 : 20Cr)

SSTG0052-1	<i>Internship in industry or agency</i> (english language) - Michaël DE BECKER, Marc GEORGES	B2	TA	-	70	-	<b>5</b>
SPAT0072-1	<i>Seminars on space activities</i> (english language) - Marc GEORGES	B2	Q1	30	-	-	<b>5</b>
GEST3162-1	<i>Principles of management</i> (english language) - François PICHULT, Willem STANDAERT - [25h Proj.]	B2	Q1	30	-	[+]	<b>5</b>
SPAT0073-1	<i>Space optics</i> (english language) - Jérôme LOICQ	B2	Q1	30	10	-	<b>5</b>

##### Optional courses (B2 : 10Cr)

In agreement with the jury, chose courses that haven't already been chosen for a total of 10 credits from the list below: (B2 : 10Cr)

SPAT0074-1	<i>Internship complement</i> (english language) - Michaël DE BECKER	B2	TA	-	40	-	<b>3</b>
ELEN0008-1	<i>Principles of analog and digital telecommunications systems</i> - Marc VAN DROOGENBROECK	B2	Q2	26	26	-	<b>5</b>
AERO0018-3	<i>Space experiment development</i> (english language) - Denis GRODENT, Jérôme LOICQ	B2	Q2	26	26	-	<b>5</b>
GEOG0037-1	<i>Global Navigation Satellite Systems</i> - René WARNANT	B2	Q1	40	15	-	<b>5</b>
SPAT0032-2	<i>Remote sensing</i> (english language) - François JONARD	B2	Q1	20	20	-	<b>5</b>

[...] this list can be extended to courses of interest in the space sector included in the curriculum of other master's degrees:

## Additional ECTS (max 15-60) Master in space sciences (120 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