

## Cycle view of the study programme

B1 Or Th Pr Au Cr

### Cours au choix de la finalité (B2 : 30Cr)

In agreement with the Jury, choose complementary courses not already selected for a total of 30 credits from the study programmes of the ULiège. (B2 : 30Cr)

[...] courses for a total of 30 credits

### Cours obligatoires du tronc commun (B1 : 4Cr, B2 : 18Cr)

MATH0112-1	<i>Preparation for the final thesis</i> - COLLÉGIALITÉ, JeanPierre SCHNEIDERS	B1	TA	-	-	-	<b>4</b>
	<i>Notice</i> : this course can be taken either in block 1 or block 2.						
SMEM0012-1	<i>Final thesis</i> - COLLÉGIALITÉ, JeanPierre SCHNEIDERS	B2	TA	-	-	-	<b>18</b>

### Cours au choix du tronc commun (B1 : 56Cr, B2 : 12Cr)

In agreement with the Jury, choose courses not already taken for a total of 68 credits from the lists below, a minimum of 44 credits from the Mathematical list to be acquired throughout the cycle: (B1 : 56Cr, B2 : 12Cr)

#### Mathematics

[...] at least 44 credits from the courses of Mathematics

[...] the remainder of the courses not chosen from the 'Mathematics' list

#### Other disciplines

[...] maximum 12 credits from the courses of other disciplines (B1)

*Notice* : compatibility of the timetable with the courses in the Mathematics list cannot be guaranteed.

[...] the remainder of the courses not chosen from the 'Other subjects' list

#### Other courses

[...] a maximum of 10 credits in the curriculum of the University of Liège or another institution (B1)

[...] The course programme at the University of Liège or another institution

### Mathematics

#### Mathematical analysis

MATH0074-1	<i>Theory of distributions</i> - Françoise BASTIN (Odd years)	-	Q2	25	15	-	<b>4</b>
MATH0257-2	<i>Complex analysis</i> - JeanPierre SCHNEIDERS	-	Q1	30	30	-	<b>6</b>
MATH0220-2	<i>Complements to complex analysis</i> - JeanPierre SCHNEIDERS - [20h Mon. WS] (Odd years)	-	Q2	30	10	[+]	<b>8</b>
	<b>Prerequisite :</b> MATH0257-2 - Analyse complexe						
	<b>Corequisite :</b> MATH0074-1 - Théorie des distributions						
MATH0463-1	<i>Functional analysis</i> - Céline ESSER - [20h Mon. WS] (Even years)	-	Q1	30	10	[+]	<b>8</b>
MATH0512-1	<i>Functional spaces and representational families</i> - Françoise BASTIN, Samuel NICOLAY - [20h Mon. WS] (Even years)	-	Q1	30	10	[+]	<b>8</b>
MATH0513-1	<i>Functional spaces relating to measurement theory</i> - Samuel NICOLAY - [20h Mon. WS] (Even years)	-	Q2	30	10	[+]	<b>8</b>
MATH0209-3	<i>Measure Theory</i> - Samuel NICOLAY - [20h Mon. WS] (Odd years)	-	Q1	30	10	[+]	<b>8</b>
MATH0082-1	<i>Research problems in analysis</i> (english language) - Françoise BASTIN, Céline ESSER, Samuel NICOLAY, JeanPierre SCHNEIDERS - [20h Mon. WS]	-	TA	30	10	[+]	<b>10</b>

#### Discrete mathematics

MATH0075-1	<i>Discrete mathematics</i> - Manon STIPULANTI (Even years)	-	Q1	30	20	-	<b>8</b>
MATH0076-1	<i>Discrete mathematics project</i> - Emilie CHARLIER, Julien LEROY, Michel RIGO, Manon STIPULANTI (Even years) <b>Corequisite :</b> MATH0083-1 - Théorie ergodique MATH0075-1 - Mathématiques discrètes	-	TA	-	-	-	<b>4</b>
MATH0083-1	<i>Ergodic theory</i> - Julien LEROY (Even years)	-	Q1	30	20	-	<b>8</b>
INFO0212-2	<i>Algorithmics and computability</i> - Emilie CHARLIER (Odd years)	-	Q1	30	20	-	<b>8</b>
MATH0470-1	<i>Combinatorics on words</i> (english language) - Manon STIPULANTI (Odd years)	-	Q1	30	20	-	<b>8</b>
MATH0077-1	<i>Project on combinations</i> - Emilie CHARLIER, Julien LEROY, Michel RIGO, Manon STIPULANTI (Odd years) <b>Corequisite :</b> MATH0470-1 - Combinatorics on words INFO0212-2 - Algorithmique et calculabilité	-	TA	-	-	-	<b>4</b>
MATH0078-1	<i>Research problems in discrete mathematics</i> - Emilie CHARLIER, Julien LEROY, Michel RIGO, Manon STIPULANTI - [20h Mon. WS] <b>Corequisite :</b> MATH0076-1 - Projet de mathématiques discrètes MATH0077-1 - Projet de combinatoire	-	TA	30	10	[+]	<b>10</b>

#### Probability and statistics

STAT0725-2	<i>Bayesian statistics</i> - Philippe LAMBERT - [20h Mon. WS] (Even years)	-	Q2	30	10	[+]	<b>8</b>
STAT0727-2	<i>Non-parametric statistics</i> - Gentiane HAESBROECK - [20h Mon. WS] (Even years)	-	Q1	30	10	[+]	<b>8</b>
MATH2022-1	<i>Monte Carlo methods in statistics</i> (english language) - Arnout VAN MESSEM - [40h Proj.] (Even years)	-	Q2	24	12	[+]	<b>8</b>
MATH0514-1	<i>Stochastic analysis</i> - Laurent LOOSVELDT - [20h Proj.] (Even years)	-	Q2	30	10	[+]	<b>8</b>
MATH0079-1	<i>Stochastic process</i> - Laurent LOOSVELDT - [20h Proj.] (Odd years)	-	Q2	30	10	[+]	<b>8</b>
STAT0078-1	<i>Practice of statistical consultancy</i> - Marie ERNST - [20h Mon. WS] (Odd years) <b>Corequisite :</b> STAT0082-1 - Statistique multivariée MATH2022-1 - Monte Carlo methods in statistics	-	Q2	20	-	[+]	<b>4</b>
STAT0082-1	<i>Statistique multivariée</i> - Gentiane HAESBROECK - [20h Mon. WS] (Odd years) <b>Corequisite :</b> MATH2021-1 - High-dimensional statistics	-	Q1	30	10	[+]	<b>8</b>
INFO2048-1	<i>Business Analytics</i> (english language) - Michael SCHYNS	-	Q2	30	-	-	<b>5</b>
ELEN0062-1	<i>Introduction to machine learning</i> (english language) - Pierre GEURTS, Louis WEHENKEL - [40h Proj.]	-	Q1	30	5	[+]	<b>8</b>
MATH0084-1	<i>Research problems in probability and statistics</i> (english language) - Céline ESSER, Gentiane HAESBROECK, Laurent LOOSVELDT, Arnout VAN MESSEM - [20h Mon. WS]	-	TA	30	10	[+]	<b>10</b>

#### Other fields

MATH0017-3	<i>Mathematical Logic and Set Theory</i> - Julien LEROY - [20h Mon. WS]	-	Q2	30	10	[+]	<b>8</b>
MATH0212-2	<i>General topology</i> - Céline ESSER - [10h Mon. WS]	-	Q2	30	20	[+]	<b>6</b>
MATH0465-1	<i>Algebraic Topology</i> - JeanPierre SCHNEIDERS - [20h Mon. WS] (Even years)	-	Q2	30	10	[+]	<b>8</b>
MATH0464-1	<i>Differential geometry II</i> - Pierre MATHONET - [20h Mon. WS] (Even years)	-	Q1	30	10	[+]	<b>8</b>

MATH0489-1	<i>Lie algebra</i> - Pierre MATHONET - [20h Mon. WS]	-	Q2	30	10	[+]	<b>8</b>
MATH2483-1	<i>History of mathematics</i> - Kevin BALHAN, Pierre MATHONET, Naïm ZENAÏDI	-	Q2	25	20	-	<b>4</b>
PHYS0999-1	<i>Digital creation in sciences</i> - Roland BILLEN, Valentin FISCHER, Pierre MATHONET, JeanChristophe MONBALIU, Eric PARMENTIER, Nicolas VANDEWALLE - [30h Proj.]	-	TA	10	-	[+]	<b>4</b>
<b>Other disciplines</b>							
SSTG2037-1	<i>Internship in a company</i> - COLLÉGIALITÉ, Michel RIGO - [120h Proj.]	-	TA	-	-	[+]	<b>10</b>
<b>Computer science</b>							
INFO2009-2	<i>Introduction to computer science</i> - Bernard BOIGELOT	-	Q1	24	14	-	<b>4</b>
INFO0061-4	<i>Computers organization</i> - Bernard BOIGELOT	-	Q2	15	15	-	<b>3</b>
INFO0009-2	<i>Database (general organisation)</i> - Christophe DEBRUYNE - [25h Proj.]	-	Q2	26	26	[+]	<b>6</b>
INFO0902-1	<i>Data structures and algorithms</i> - Pierre GEURTS - [40h Proj.]	-	Q2	26	20	[+]	<b>6</b>
INFO0027-2	<i>Programming techniques (english language)</i> - <i>Algorithmics</i> - Laurent MATHY - [40h Proj.] - <i>Software patterns</i> - Laurent MATHY - [30h Proj.]	-	Q2	14	14	[+]	<b>6</b>
				10	10	[+]	
INFO0054-1	<i>Functional programming</i> - Christophe DEBRUYNE - [20h Proj.]	-	Q1	24	24	[+]	<b>6</b>
INFO0062-1	<i>Object-oriented programming (english language)</i> - Bernard BOIGELOT - [20h Proj.]	-	Q2	25	20	[+]	<b>5</b>
INFO0085-1	<i>Compilers (english language)</i> - Pascal FONTAINE - [75h Proj.]	-	Q2	25	-	[+]	<b>6</b>
MATH0462-1	<i>Discrete optimization (english language)</i> - Quentin LOUVEAUX - [25h Proj.]	-	Q2	30	20	[+]	<b>6</b>
INFO8006-1	<i>Introduction to artificial intelligence (english language)</i> - Gilles LOUPPE - [45h Proj.]	-	Q1	25	20	[+]	<b>6</b>
MATH0461-2	<i>Introduction to numerical optimization (english language)</i> - Quentin LOUVEAUX - [25h Proj.]	-	Q1	30	20	[+]	<b>6</b>
<b>Astrophysics and astronomy</b>							
ASTR0204-2	<i>Astrophysics and geophysics</i> - MarcAntoine DUPRET, Valérie VAN GROOTEL	-	Q1	30	30	-	<b>8</b>
SPAT0012-1	<i>General relativity (english language)</i> - Guillaume MAHLER	-	Q1	30	10	-	<b>4</b>
SPAT0044-1	<i>Stellar structure and evolution I (english language)</i> - MarcAntoine DUPRET	-	Q1	35	-	-	<b>4</b>
SPAT0045-1	<i>Stellar structure and evolution II (english language)</i> - MarcAntoine DUPRET	-	Q2	20	20	-	<b>4</b>
<b>Finance and management</b>							
GEST0832-4	<i>Financial Markets</i> - Georges HÜBNER	-	Q2	40	15	-	<b>5</b>
FINA0053-1	<i>Investments and Portfolio Management (english language)</i> - Georges HÜBNER <b>Corequisite :</b> GEST0832-4 - Marchés financiers	-	Q2	30	-	-	<b>5</b>
MQGE0001-6	<i>Operations Research (english language)</i> - Jérôme DE BOECK	-	Q1	45	-	-	<b>5</b>
LOGI0010-1	<i>Supply Chain Management (english language)</i> - Yasemin ARDA <b>Corequisite :</b> MQGE0001-6 - Operations Research	-	Q2	45	-	-	<b>5</b>
MQGE0007-1	<i>Financial Mathematics and Stochastic Calculus (english language)</i> - Elise VANDOMME	-	Q2	30	-	-	<b>5</b>

	<b>Corequisite :</b> GEST0832-4 - Marchés financiers								
LOGI0012-1	<i>Logistics and Transportation</i> (english language) - Sabine LIMBOURG	-	Q2	30	-	-	-	-	<b>5</b>
LOGI0013-1	<i>Operation Planning</i> (english language) - Yasemin ARDA	-	Q2	30	-	-	-	-	<b>5</b>
	<b>Corequisite :</b> LOGI0010-1 - Supply Chain Management								
FINA0052-1	<i>Financial Derivatives</i> (english language) - Julien HAMBUECKERS	-	Q2	30	-	-	-	-	<b>5</b>
	<b>Corequisite :</b> GEST0832-4 - Marchés financiers								
FINA0064-1	<i>Financial Risk Modeling</i> (english language) - Julien HAMBUECKERS	-	Q1	30	-	-	-	-	<b>5</b>
	<b>Corequisite :</b> MQGE0007-1 - Financial Mathematics and Stochastic Calculus FINA0053-1 - Investments and Portfolio Management								
FINA0051-1	<i>Banking and Insurance</i> (english language) - Fabien BONIVER, Georges HÜBNER	-	Q2	30	-	-	-	-	<b>5</b>
	<b>Corequisite :</b> GEST0832-4 - Marchés financiers								
<b>Physics</b>									
PHYS0212-2	<i>Statistical physics</i> - Nicolas VANDEWALLE	-	Q2	30	30	-	-	-	<b>8</b>
PHYS0205-2	<i>Complement of physical statistics</i> - Nicolas VANDEWALLE - [20h Mon. WS]	-	Q2	30	10	[+]	-	-	<b>8</b>
PHYS3033-1	<i>Quantum physics I</i> - Thierry BASTIN	-	Q1	35	25	-	-	-	<b>8</b>
PHYS3034-1	<i>Quantum physics II</i> - Thierry BASTIN	-	Q2	20	10	-	-	-	<b>4</b>

### Additional ECTS Master in mathematics (120 ECTS)

[...] The update course, worth a maximum of 60 credits, will be determined based on students' prior training.