

Vue cycle du programme des cours

B1 Or Th Pr Au Cr

Depending on your track record or your professional/research focus, some prerequisites/corequisites of your first year program might appear in bloc 2. You are therefore invited to go through the list of courses suggested in bloc 2 even if you enroll for the first time in this master program.

To complete their curriculum, students must earn or validate the 90 credits of the compulsory courses (including the master thesis) and 30 credits from the research focus.

Ideally, students enrolling in the master program should have acquired the skills and knowledge corresponding to the 40 credits in "Physics" offered as part of the bachelor program in engineering.

Compulsory courses (B1 : 60Cr, B2 : 30Cr)
Applied physics

CHIM9308-1	<i>Physical chemistry</i> (anglais) - Bernard LEYH Corequis : PHYS0211-3 - Mécanique quantique	B1	Q1	30	10	-	4
ELEN0004-1	<i>Semiconductor devices</i> (anglais) - Benoît VANDERHEYDEN Corequis : ELEN0076-1 - Electromagnétisme	B1	Q1	26	26	-	5
MECA0023-1	<i>Advanced solid mechanics</i> (anglais) - JeanPhilippe PONTHOT - [30h Proj.] Corequis : MECA0036-2 - Finite Element Method	B1	Q1	26	26	[+]	5
MECA0446-2	<i>Continuum Mechanics</i> (anglais) - JeanPhilippe PONTHOT - [50h Proj.]	B1	Q2	26	26	[+]	5
CHIM0698-1	<i>Physical chemistry of interfaces</i> (anglais) - Cédric GOMMES	B1	Q2	20	10	-	3

Experimental methods

MECA0008-1	<i>Microfluidics</i> (anglais) - Tristan GILET - [16h Labo., 14h Proj.]	B1	Q2	22	8	[+]	5
ELEN0074-1	<i>Sensors, microsensors and instrumentation</i> (anglais) - Philippe VANDERBEMDEN - [20h Labo.]	B1	Q2	30	-	[+]	5

Modelling and design methods

MATH0024-1	<i>Modelling with partial differential equations</i> (anglais) - Maarten ARNST, Romain BOMAN - [25h Proj.] Corequis : MECA0025-3 - Mécanique des fluides	B1	Q1	30	20	[+]	4
INFO0939-1	<i>High performance scientific computing</i> (anglais) - Christophe GEUZAINÉ - [20h Proj.]	B1	Q1	30	15	[+]	4
MATH2015-1	<i>Perturbation methods</i> (anglais) - Vincent DENOËL	B1	Q2	15	15	-	3
SYST0003-1	<i>Linear control systems</i> (anglais) - <i>Theory</i> - Guillaume DRION - <i>Control system design in time domain and frequency domain</i> - Guillaume DRION - [6h Labo.]	B1	Q1	26	6	-	5
				-	20	[+]	

Projects

MATH0471-3	<i>Multiphysics integrated computational project</i> (anglais) - - Romain BOMAN, Christophe GEUZAINÉ - [30h Proj.] - - Romain BOMAN, Christophe GEUZAINÉ - [40h Proj.] Corequis : MATH2015-1 - Perturbation methods INFO0939-1 - High performance scientific computing MATH0024-1 - Modelling with partial differential equations	B1	TA	33	-	[+]	7
				11	-	[+]	
APRI0006-1	<i>Personal experimental project</i> (anglais) - Tristan GILET - [60h Proj.]	B1	TA	6	6	[+]	5
ATFE9007-1	<i>Travail de fin d'études (en ce compris une introduction à la méthodologie de la recherche)</i> - Benoît VANDERHEYDEN - [750h Proj.]	B2	TA	-	-	[+]	25

GEST3162-1 *Principles of management* (anglais) - François PICHault, Willem STANDAERT - [25h Proj.] B2 Q1 30 - [+] 5

Optional courses (B2 : 30Cr)

Single focus (B2 : 30Cr)

Research focus (B2 : 30Cr)

Choose one of the three following options : (B2 : 15Cr)

Fluids (B2 : 15Cr)

PHYS0961-1 *Irréversibilité, instabilités et chaos* - Pierre DAUBY B2 Q1 30 30 - 5
 OCEA0071-1 *Geophysical fluid dynamics - part 1* (anglais) - JeanMarie BECKERS B2 Q2 30 15 - 5
 PHYS3133-1 *Complex fluids and non-Newtonian flows* (anglais) - Vincent TERRAPON B2 Q1 26 26 - 5

Solids (B2 : 15Cr)

MECA0464-1 *Large deformation of solids* (anglais) - Romain BOMAN, JeanPhilippe PONTHOT - [60h Proj.] B2 Q1 26 26 [+] 5
 MECA0058-1 *Fracture mechanics, damage and fatigue* (anglais) - Ludovic NOELS - [75h Proj.] B2 Q1 30 10 [+] 5
 MECA0516-1 *Mechanical properties of biological and bioinspired materials* (anglais) - Davide RUFFONI - [4h Labo.] B2 Q1 26 22 [+] 5

Materials and electronics (B2 : 15Cr)

ELEN0047-1 *Superconductivity* (anglais) - Philippe VANDERBEMDEN - [15h Labo.] B2 Q1 30 - [+] 5
 ELEN0446-1 *Physics of electrical insulating materials* (anglais) - Philippe VANDERBEMDEN - [15h Labo.] B2 Q1 15 - [+] 3
 CHIM0664-1 *Electrochemical energy conversion and storage* (anglais) - Nathalie JOB - [15h Labo.] B2 Q1 15 - [+] 3
 ELEN0069-1 *Nanoelectronics / Optoelectronics* (anglais) - Benoît VANDERHEYDEN - [40h Proj.] B2 Q2 30 - [+] 4

Choose 15 credits among : (B2 : 15Cr)

in either an internship

ASTG0025-1 *Internship* (anglais) - Tristan GILET B2 TA - - - 10

This course must be independent of the master's thesis. Can be carried out in either a company or in a research center outside ULiège.

or in the list of optional courses below :

The subjects MECA0036-2, ELEN0076-1, MECA0025-3 and PHYS0211-3 are corequisite to some compulsory courses of the master program. They must be taken as a priority, unless they were already taken as part of the bachelor in engineering, or unless the corresponding knowledge and skills have been acquired previously.

MECA0036-2 *Finite Element Method* (anglais) - JeanPhilippe PONTHOT - [40h Proj.] B2 Q2 26 26 [+] 5
 ELEN0076-1 *Electromagnétisme* - Benoît VANDERHEYDEN B2 Q1 26 26 - 5
 MECA0025-3 *Mécanique des fluides* - Eric DELHEZ - [30h Proj.] B2 Q2 26 26 [+] 5
 PHYS0211-3 *Mécanique quantique* - John MARTIN B2 Q1 26 26 - 5

Remarque : students enrolled in a Master's degree for the first time in 2018-2019 must follow the

course in the 2nd quarter. Students already enrolled in a Master's degree in 2017-2018 must follow it in the 1st quarter.

BIOL0114-4	<i>Microscopies électroniques, Partim A</i> - Philippe COMPÈRE	B2	Q2	15	-	-	3
AERO0030-1	<i>Computational fluid dynamics</i> (anglais) - Vincent TERRAPON - [10h Labo.]	B2	Q2	30	20	[+]	5
CHIM0697-1	<i>Heterogeneous catalysis</i> (anglais) - Nathalie JOB - [10h Proj.]	B2	Q1	20	20	[+]	4
ELEC0041-1	<i>Modelling and design of electromagnetic systems</i> (anglais) - Christophe GEUZAINÉ	B2	Q2	26	26	-	5
MECA0027-1	<i>Structural and multidisciplinary optimization</i> (anglais) - Pierre DUYSINX, Patricia TOSSINGS - [18h Proj.]	B2	Q1	30	12	[+]	5
MECA0029-1	<i>Theory of vibration</i> (anglais) - JeanClaude GOLINVAL - [30h Proj.]	B2	Q1	26	26	[+]	5
MECA0010-1	<i>Reliability and stochastic modeling of engineering systems</i> (anglais) - Maarten ARNST - [28h Proj.]	B2	Q1	16	16	[+]	5
MECA0470-1	<i>New methods in computational mechanics</i> (anglais) - Maarten ARNST, Eric BÉCHET, Ludovic NOELS - [40h Proj.]	B2	Q2	20	-	[+]	5
MECA0518-1	<i>Environmental hydrodynamics</i> (anglais) - Benjamin DEWALS	B2	Q2	26	26	-	5
PHYS0038-2	<i>Introduction into polymer physics including plasturgy</i> (anglais) - Klaus KECKANTOINE, Klaus KECKANTOINE	B2	Q1	30	-	-	4
MATH0461-2	<i>Introduction to numerical optimization</i> (anglais) - Quentin LOUVEAUX - [25h Proj.]	B2	Q1	30	20	[+]	5
INGE0012-1	<i>Scientific research in engineering and its impact on innovation</i> (anglais) - Rodolphe SEPULCHRE	B2	Q2	26	26	-	5
MECA0524-1	<i>CAD & Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.]	B2	Q1	20	20	[+]	5
PROJ0011-2	<i>Personal student project</i> (anglais) - Georges DE PELSEMAEKER, Pierre DUYSINX, Liesbet GERIS, Grégoire LÉONARD - [150h Proj.]	B2	TA	-	-	[+]	5

[...] or in either another option

[...] subject to the approval of the Cycle jury, up to 10 credits can be chosen in the ULiège course programme