

Cycle view of the study programme

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

Experimental methods

MECA0008-1	<i>Microfluidics</i> (english language) - Tristan GILET - [16h Labo., 14h Proj.]	B1	Q1	22	8	[+]	5
ELEN0074-1	<i>Sensors, microsensors and instrumentation</i> (english language) - Philippe VANDERBEMDEN - [20h Labo.]	B1	Q2	30	-	[+]	5

Modelling and design methods

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

Projects

MATH0471-3	<i>Multiphysics integrated computational project</i> (english language) - Romain BOMAN, Christophe GEUZAINÉ - [70h Proj.] Corequisite : MATH2015-1 - Perturbation methods INFO0939-1 - High performance scientific computing MATH0024-1 - Modelling with partial differential equations	B1	TA	20	-	[+]	8
APRI0006-1	<i>Personal experimental project</i> (english language) - Tristan GILET - [60h Proj.]	B1	TA	-	-	[+]	4
ATFE9007-1	<i>Final thesis (included an introduction to research methodology)</i> - Benoît VANDERHEYDEN - [750h Proj.]	B2	TA	-	-	[+]	25

Study programmes 2016-2017

Faculty of Applied Sciences

Master in physical engineering (120 ECTS)

GEST3162-1 *Principles of management (english language)* - Michael GHILISSEN, François PICHAULT, Thierry PIRONET, Didier VAN CAILLIE - Suppl : Fanny FOX B2 Q1 25 25 - 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)

PHYS0090-1 *Complex fluids and non-Newtonian flows (english language)* - Vincent TERRAPON B2 Q1 30 30 - 5
Prerequisite :
 MECA0025-3 - Mécanique des fluides

PHYS0961-1 *Irreversibility, instabilities and chaos* - Pierre DAUBY B2 Q1 30 30 - 5

OCEA0071-1 *Geophysical fluid dynamics - part 1 (english language)* - JeanMarie BECKERS B2 Q2 30 15 - 5

Solids (B2 : 15Cr)

MECA0464-1 *Large deformation of solids (english language)* - JeanPhilippe PONTHOT - [60h Proj.] B2 Q1 30 30 [+] 5

MECA0058-1 *Fracture mechanics, damage and fatigue (english language)* - Ludovic NOELS - [75h Proj.] B2 Q1 30 10 [+] 5

MECA0516-2 *Mechanical properties of biological and bioinspired materials (english language)* - Davide RUFFONI B2 Q1 30 30 - 5

Materials and electronics (B2 : 15Cr)

ELEN0047-1 *Superconductivity (english language)* - Philippe VANDERBEMDEN - [15h Labo.] B2 Q1 30 - [+] 5

ELEN0446-1 *Physics of electrical insulating materials (english language)* - Philippe VANDERBEMDEN - [15h Labo.] B2 Q1 15 - [+] 3

CHIM0664-1 *Electrochemical energy conversion and storage (english language)* - Nathalie JOB - [15h Labo.] B2 Q1 15 - [+] 3

ELEN0069-1 *Nanoelectronics / Optoelectronics (english language)* - Benoît VANDERHEYDEN - [40h Proj.] B2 Q2 30 - [+] 4

Choose 15 credits among : (B2 : 15Cr)

- [...] in either another option, an internship, or in the list of optional courses below :
- [...] subject to the approval of the Cycle jury, up to 10 credits can be chosen in the ULg course programme

Optional courses

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 (english language)* - JeanPhilippe PONTHOT - [40h Proj.] B2 Q2 30 30 [+] 5

ELEN0076-1 *Electromagnetism* - Patricia ROUSSEAUX, Benoît VANDERHEYDEN B2 Q1 30 30 - 5

MECA0025-3 *Fluid Mechanics* - Eric DELHEZ - [30h Proj.] B2 Q2 30 30 [+] 5

PHYS0211-3 *Quantum Mechanics* - John MARTIN B2 Q1 30 30 - 5

AERO0030-1 *Computational fluid dynamics (english language)* - Vincent TERRAPON B2 Q1 30 20 [+] 5

Study programmes 2016-2017

Faculty of Applied Sciences

Master in physical engineering (120 ECTS)

- [10h Labo.]

BIOL0114-4	<i>Electronic microscopies</i> - Philippe COMPÈRE	B2	Q2	15	-	-	3
CHIM0697-1	<i>Heterogeneous catalysis</i> (english language) - Nathalie JOB - [10h Proj.]	B2	Q2	20	20	[+]	4
CHIM9231-1	<i>Characterization of Biomaterials</i> (english language) - Edwin DE PAUW, MarieClaire GILLET	B2	Q1	15	15	-	3
ELEC0041-1	<i>Modelling and design of electromagnetic systems</i> (english language) - Patrick DULAR, Christophe GEUZAINÉ	B2	Q2	30	30	-	5
INFO2046-2	<i>Computational geometry</i> (english language) - Eric BÉCHET - [95h Proj.]	B2	Q1	25	-	[+]	5
MECA0027-1	<i>Structural and multidisciplinary optimization</i> (english language) - Pierre DUYSINX, Patricia TOSSINGS - [18h Proj.]	B2	Q1	30	12	[+]	5
MECA0029-1	<i>Theory of vibration</i> (english language) - JeanClaude GOLINVAL - [30h Proj.]	B2	Q1	30	30	[+]	5
MECA0010-1	<i>Reliability and stochastic modeling of engineering systems</i> (english language) - Maarten ARNST - [28h Proj.]	B2	Q2	16	16	[+]	5
MECA0470-1	<i>New methods in computational mechanics</i> (english language) - Maarten ARNST, Eric BÉCHET, Ludovic NOELS - [40h Proj.]	B2	Q2	20	-	[+]	5
MECA0518-1	(pas organisé en 2016-2017) <i>Environmental hydrodynamics</i> (english language) - Benjamin DEWALS	B2	Q2	30	30	-	5
PHYS0038-2	<i>Introduction into polymer physics including platurgy</i> - Klaus KECKANTOINE	B2	Q1	30	-	-	4
MATH0461-2	<i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.]	B2	Q1	30	20	[+]	5
INGE0012-1	<i>Scientific research in engineering and its impact on innovation</i> (english language) - Rodolphe SEPULCHRE	B2	Q2	30	30	-	5
PROJ0011-1	<i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.]	B2	TA	-	-	[+]	5
Intership							
ASTG0025-1	<i>Internship</i> (english language) - COLLÉGIALITÉ, Tristan GILET	B2	TA	-	-	-	10