

## Cycle view of the study programme

B1 Or Th Pr Au Cr

Depending on your educational background or depending on the focus, it is possible that the prerequisites / corequisites for the 1st year of the programme are presented in the block 2. You are therefore invited to read through the list of courses in block 2 even if you are registering for the first time in this master.

As part of the Master in mechanical engineering, students must follow or approve 50 core training credits (including placement and final dissertation), 10 credits from the list "computational mechanics", 30 credits of optional courses and 30 credits from one of the two professional focuses.

Ideally, students taking the Masters will have acquired the skills and knowledge corresponding to 40 credits for the specific technical classes in the field of "mechanics" organised as part of the Bachelor in civil engineering.

### Compulsory courses (B1 : 20Cr, B2 : 30Cr)

#### Mechanical design and production

MECA0444-1	<i>Mechanical design and machining</i> - Jean STUTO - Suppl : Eric BÉCHET, JeanLuc BOZET, Olivier BRULS, Pierre DUYSINX - [15h Labo., 11h Proj., 0,5d FW]	B1	Q2	30	-	[+]	5
MECA0474-1	<i>Mechanical computer-Aided-Design</i> (english language) - Eric BÉCHET - [30h Proj.]	B1	Q1	30	30	[+]	5
MECA0462-2	<i>Materials selection</i> (english language) - Davide RUFFONI - [30h Proj., 1d FW]	B1	Q1	30	30	[+]	5
ASTG0117-1	<i>Integration internship</i> (english language) - Pierre DEWALLEF <b>Corequisite :</b> ATFE0013-1 - Travail de fin d'études GEST3162-1 - Principles of management	B2	TA	-	-	-	5
ATFE0013-1	<i>Final work</i> - COLLÉGIALITÉ, Pierre DUYSINX - [750h Proj.]	B2	TA	-	-	[+]	25
GEST3162-1	<i>Principles of management</i> (english language) - Michael GHILISSEN, François PICHULT, Thierry PIRONET, Didier VAN CAILLIE - Suppl : Fanny FOX	B1	Q1	25	25	-	5

### Optional courses (B1 : 40Cr, B2 : 30Cr)

Choose 10 credits of optional courses from the following : (B1 : 10Cr)

[...] Computational mechanics 1

**Students who have not followed the courses MECA0155-2 and MECA0036-2 from the "Mechanics" option of the bachelor in civil engineering programme or acquired the equivalent knowledge and skills have to choose in priority these two courses in their study programme ; these courses are corequisites of compulsory courses of the master.**

MECA0155-2	<i>Dynamics of Mechanical Systems</i> - JeanClaude GOLINVAL - [5h Labo., 10h Proj.]	B1	Q1	30	30	[+]	5
MECA0036-2	<i>Finite Element Method</i> (english language) - JeanPhilippe PONTHOT - [40h Proj.]	B1	Q2	30	30	[+]	5
MECA0029-1	<i>Theory of vibration</i> (english language) - JeanClaude GOLINVAL - [30h Proj.] <b>Corequisite :</b> MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B1	Q1	30	30	[+]	5
MECA0031-2	<i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.] <b>Corequisite :</b> MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B1	Q2	30	20	[+]	5
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [30h Proj.] <b>Corequisite :</b>	B1	Q1	30	30	[+]	5

MECA0155-2 - Dynamique des systèmes mécaniques  
MECA0036-2 - Finite Element Method

MECA0010-1	<i>Reliability and stochastic modeling of engineering systems</i> (english language) - Maarten ARNST - [28h Proj.]	B1	Q2	16	16	[+]	5
	<b>Corequisite :</b> MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method						

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

PROJ0011-1	<i>Personal student project</i> (english language) - Bernard BOIGELOT, COLLÉGIALITÉ - [150h Proj.]	B2	TA	-	-	[+]	5
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[...] Maximum 5 credits from the language courses programme organised by ISLV in other faculties or from the restricted list below

LANG1957-1	<i>Dutch for Engineers, part 1</i> (dutch language) - Claudine COLIN	B2	Q1	36	-	-	3
LANG2978-1	<i>Dutch for engineer, part 2</i> - Claudine COLIN	B2	Q2	24	-	-	2
	<b>Corequisite :</b> LANG1957-1 - Néerlandais pour l'ingénieur, partim 1						

LANG1958-1	<i>German for engineer, Part 1</i> (german language) - Françoise CARL	B2	Q1	36	-	-	3
LANG2979-1	<i>German for engineers, part 2</i> - Françoise CARL, ISLV	B2	Q2	24	-	-	2
	<b>Corequisite :</b> LANG1958-1 - Allemand pour l'ingénieur, partim 1						

[...] Maximum 30 ECTS from the lists Mechanical engineering, Mecatronic 2, Computational mechanics 2 and Vehicles and transports

[...] Maximum 5 ECTS from the courses list of other masters of the Faculty of applied sciences in agreement with the jury

#### Mechanical engineering

MECA0069-1	<i>Advanced production methods</i> - N... - [4h Labo.]	B2	Q2	30	26	[+]	5
MECA0473-1	<i>Metallic materials Engineering</i>	B2	Q1	30	30	-	5
MECA0138-1	<i>Welding and non-destructive tests</i> - Nathalie GERLACH, Adnen ben Mahmoud KECHAOU - [30h Labo.]	B2	Q1	30	-	[+]	5
MECA0139-1	<i>Techniques of additive manufacturing and 3D printing</i> - Thierry DORMAL, Anne MERTENS	B2	Q1	15	15	-	3
MECA0035-1	<i>Lubrication and tribology</i> - JeanLuc BOZET	B2	Q1	30	30	-	5
MECA0509-1	<i>Sustainable engineering processes</i> (english language) - Georges DE PELSEMAEKER	B2		15	30	-	5
GEST0188-1	<i>Determination and Recognition of Quality and Conformity</i> - JeanMichel COMPÈRE, Pierre DEWALLEF	B2	Q1	30	-	-	3
	<b>Corequisite :</b> MECA0521-1 - Gestion QSHE						
MECA0521-1	<i>HSE management, Part 2 : Practical aspects of HSE management</i> - Pierre DEWALLEF - [10h Proj., 1d FW]	B2	TA	20	10	[+]	2
	<b>Corequisite :</b> MECA0051-2 - Gestion QSHE						
MECA0006-1	<i>Thermal Machines and Systems</i> - Vincent LEMORT - [4h Proj.]	B2	Q1	30	30	[+]	5
CHIM0699-2	<i>Life cycle analysis - ecodesign</i> - Sandra BELBOOM, Angélique LÉONARD	B2	Q1	10	30	-	3
MECA0502-1	<i>Mechanics of composites</i> (english language) - Michaël BRUYNEEL	B2	Q1	30	30	-	5

#### Mecatronic 2

ELEC0055-1	<i>Electronic control systems</i> (english language) - Fabrice FREBEL	B2	Q1	30	30	-	5
MECA0517-1	<i>Advanced industrial robotics</i> (english language) - Olivier BRULS -	B2	Q2	30	20	[+]	5

[10h Proj.]

INFO0948-2	<i>Introduction to intelligent robotics</i> (english language) - Renaud DETRY, Louis WEHENKEL - [80h Proj.]	B2	Q2	30	4	[+]	5
INFO0064-2	<i>Embedded systems</i> (english language) - Bernard BOIGELOT	B2	Q1	25	20	-	3
INFO2055-1	<i>Embedded systems project</i> (english language) - Bernard BOIGELOT - [60h Proj.]	B2	Q2	-	-	[+]	2
GBIO0012-2	<i>Biomechanics</i> (english language) - Davide RUFFONI - [1d FW]	B2	Q1	30	30	[+]	5
MECA0516-1	<i>Mechanical properties of biological and bioinspired materials</i> (english language) - Davide RUFFONI - [3h Labo.]	B2	Q1	15	12	[+]	3
GBIO0022-1	<i>Biomimeticism</i> (english language) - Philippe COMPÈRE, Liesbet GERIS, Tristan GILET, Eric PARMENTIER, Davide RUFFONI - [45h Proj.]	B2	TA	15	-	[+]	5
MECA0008-1	<i>Microfluidics</i> (english language) - Tristan GILET - [16h Labo., 14h Proj.]	B2	Q1	22	8	[+]	5
PROT0430-3	<i>Biomedical robotics and active prostheses</i> - Olivier BRULS	B2	Q1	15	10	-	3

#### Computational mechanics 2

MECA0464-1	<i>Large deformation of solids</i> (english language) - JeanPhilippe PONTHOT - [60h Proj.]	B2	Q1	30	30	[+]	5
MECA0058-1	<i>Fracture mechanics, damage and fatigue</i> (english language) - Ludovic NOELS - [75h Proj.]	B2	Q1	30	10	[+]	5
MECA0062-1	<i>Vibration testing and experimental modal analysis</i> (english language) - JeanClaude GOLINVAL - [30h Proj.] <b>Prerequisite :</b> MECA0029-1 - Theory of vibration	B2	Q1	30	30	[+]	5
MECA0470-1	<i>New methods in computational mechanics</i> (english language) - Maarten ARNST, Eric BÉCHET, Ludovic NOELS - [40h Proj.]	B2	Q2	20	-	[+]	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
INFO0939-1	<i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ - [20h Proj.]	B2	Q1	30	15	[+]	5
MATH0024-1	<i>Modelling with partial differential equations</i> (english language) - Maarten ARNST, Romain BOMAN - [25h Proj.]	B2	Q1	30	20	[+]	5
MATH0471-2	<i>Multiphysics integrated computational project</i> (english language) - Romain BOMAN, Christophe GEUZAINÉ - [30h Proj.] <b>Corequisite :</b> INFO0939-1 - High performance scientific computing MATH0024-1 - Modelling with partial differential equations	B2	TA	20	-	[+]	5
MECA0029-1	<i>Theory of vibration</i> (english language) - JeanClaude GOLINVAL - [30h Proj.] <b>Corequisite :</b> MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B2	Q1	30	30	[+]	5
MECA0031-2	<i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.] <b>Corequisite :</b> MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B2	Q2	30	20	[+]	5
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [30h Proj.]	B2	Q1	30	30	[+]	5

**Corequisite :**

MECA0155-2 - Dynamique des systèmes mécaniques

MECA0036-2 - Finite Element Method

MECA0010-1 *Reliability and stochastic modeling of engineering systems* (english language) - Maarten ARNST - [28h Proj.] B2 Q2 16 16 [+] 5

**Corequisite :**

MECA0155-2 - Dynamique des systèmes mécaniques

MECA0036-2 - Finite Element Method

**Vehicles and transport**

MECA0041-1 *Internal combustion engine* - Philippe NGENDAKUMANA - [1,5d FW, 20h Proj.] B2 Q2 30 30 [+] 5

GCIV2177-1 *Fundamentals of transportation : sustainable transport* (english language) - Mario COOLS B2 Q1 15 15 - 2

CNAV0020-1 *Introduction to naval construction* - André HAGE, Philippe RIGO B2 Q1 40 30 - 5

MECA0063-1 *Vehicle Architecture* - Pierre DUYSINX - [30h Proj.] B2 Q2 30 - [+] 5

**Choose one focus from the following : (B1 : 30Cr)**

**Professional focus in mechanical engineering (B1 : 30Cr)**

APRI0005-3 *Integrated mechanical project* - Maarten ARNST, Eric BÉCHET, JeanLuc BOZET, Olivier BRULS, Pierre DUYSINX, Tristan GILET, Davide RUFFONI, Jean STUTO - [250h Proj., 5d FW] B1 TA 50 - [+] 15

**Corequisite :**

MECA0474-1 - Mechanical Computer-Aided-Design

MECA0462-2 - Materials selection

MECA0444-1 - Conception mécanique et usinage

Choose courses totalling 15 credits from the list Mecatronic : (B1 : 15Cr)

[...] Mecatronic 1

MECA0504-1 *Industrial automation* - Olivier BRULS, Pierre DUYSINX - [30h Labo.] B1 Q2 30 - [+] 5

ELEN0074-1 *Sensors, microsensors and instrumentation* (english language) - Philippe VANDERBEMDEN - [20h Labo.] B1 Q2 30 - [+] 5

MECA0009-2 *Introduction to microtechnology* (english language) - Tristan GILET - [8h Labo., 22h Proj.] B1 Q2 12 12 [+] 5

SYST0003-1 *Linear control systems* (english language) - Guillaume DRION - [6h Labo.] B1 Q1 30 30 [+] 5

MECA0467-1 *Turbomachines* - Olivier LÉONARD B1 Q2 30 30 - 5

**Professional focus in sustainable automotive engineering (B1 : 30Cr)**

PROJ0013-1 *Innovation project in automotive engineering* (english language) - Olivier BRULS, Georges DE PELSEMAEKER, Grigorios DIMITRIADIS, Pierre DUYSINX, Vincent LEMORT - [80h Proj., 1d FW] B1 Q1 20 - [+] 8

**Corequisite :**

MECA0492-2 - Vehicle dynamics

MECA0497-2 - Vehicle performance

MECA0492-2 *Vehicle dynamics* (english language) - Pierre DUYSINX B1 Q1 15 10 - 2

**Corequisite :**

MECA0496-2 - Materials for automotive applications

MECA0494-3 - Vehicle components I

MECA0493-2 - Vehicle aerodynamics

MECA0493-2 *Vehicle aerodynamics* (english language) - Grigorios DIMITRIADIS B1 Q1 15 10 - 2

**Corequisite :**

	MECA0496-2 - Materials for automotive applications MECA0494-3 - Vehicle components I MECA0492-2 - Vehicle dynamics								
MECA0494-3	<i>Vehicle components I</i> (english language) - Olivier BRULS, Pierre DUYSINX <b>Corequisite :</b> MECA0496-2 - Materials for automotive applications MECA0493-2 - Vehicle aerodynamics MECA0492-2 - Vehicle dynamics	B1	Q1	25	15	-			<b>3</b>
MECA0496-2	<i>Materials for automotive applications</i> (english language) <b>Corequisite :</b> MECA0494-3 - Vehicle components I MECA0493-2 - Vehicle aerodynamics MECA0492-2 - Vehicle dynamics	B1	Q1	15	10	-			<b>2</b>
MECA0497-2	<i>Vehicle performance</i> (english language) - Mustapha BELHABIB, Pierre DUYSINX - [1d FW] <b>Corequisite :</b> MECA0501-1 - Thermal and Electrical Management of vehicles MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0499-2 - Electric traction motors MECA0498-2 - Internal combustion engines	B1	Q1	25	15	[+]			<b>3</b>
MECA0498-2	<i>Internal combustion engines</i> (english language) - Philippe NGENDAKUMANA <b>Corequisite :</b> MECA0501-1 - Thermal and Electrical Management of vehicles MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0499-2 - Electric traction motors MECA0497-2 - Vehicle performance	B1	Q1	25	15	-			<b>3</b>
MECA0499-2	<i>Electric traction motors</i> (english language) - Johan GYSELINCK <b>Corequisite :</b> MECA0501-1 - Thermal and Electrical Management of vehicles MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0498-2 - Internal combustion engines MECA0497-2 - Vehicle performance	B1	Q1	15	10	-			<b>2</b>
MECA0500-2	<i>Hybrid electric and fuel cell vehicles</i> (english language) - Pierre DUYSINX, Nathalie JOB <b>Corequisite :</b> MECA0501-1 - Thermal and Electrical Management of vehicles MECA0499-2 - Electric traction motors MECA0498-2 - Internal combustion engines MECA0497-2 - Vehicle performance	B1	Q1	25	15	-			<b>2</b>
MECA0501-1	<i>Thermal and Electrical Management of vehicles</i> (english language) - Vincent LEMORT <b>Corequisite :</b> MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0499-2 - Electric traction motors MECA0498-2 - Internal combustion engines MECA0497-2 - Vehicle performance	B1	Q1	15	10	-			<b>3</b>

#### Research Focus (B1 : 30Cr)

Aimed at students who have taken this focus in 2015-2016.

## Additional ECTS Master in mechanical engineering

#### Optional courses (B0 : 60Cr)

# Study programmes 2016-2017

## Faculty of Applied Sciences

### Master in mechanical engineering (120 ECTS)

Each student's programme will be determined by the jury depending on their prior training. If an applicant does not meet certain prerequisites, his or her programme may include up to 60 additional course credits essentially taken from the list below : (B0 : 60Cr)

MECA0036-2	<i>Finite Element Method</i> (english language) - JeanPhilippe PONTHOT - [40h Proj.]	B0	Q2	30	30	[+]	<b>5</b>
MECA0155-2	<i>Dynamics of Mechanical Systems</i> - JeanClaude GOLINVAL - [5h Labo., 10h Proj.]	B0	Q1	30	30	[+]	<b>5</b>
MECA0012-6	<i>Solid mechanics</i> - Laurent DUCHENE - [15h Proj.]	B0	Q2	30	30	[+]	<b>5</b>
MECA0444-1	<i>Mechanical design and machining</i> - Jean STUTO - Suppl : Eric BÉCHET, JeanLuc BOZET, Olivier BRULS, Pierre DUYSINX - [15h Labo., 11h Proj., 0,5d FW]	B0	Q2	30	-	[+]	<b>5</b>
MECA0002-1	<i>Applied Thermodynamics and Introduction to Heat Engines</i> - Olivier LÉONARD	B0	Q1	30	30	-	<b>5</b>
MECA0445-2	<i>Heat transfer</i> (english language) - Pierre DEWALLEF, Vincent TERRAPON - [4h Labo., 9h Proj.]	B0	Q2	30	26	[+]	<b>5</b>
MATH0006-3	<i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX	B0	Q1	20	20	-	<b>4</b>
MECA0001-2	<i>Mechanics of materials</i> - JeanPierre JASPART - [2h Labo., 12h Proj.]	B0	Q1	30	28	[+]	<b>5</b>
LANG0039-2	<i>English 2</i> (english language) - Christine FILOT, ISLV - [20h Proj.]	B0	TA	-	30	[+]	<b>3</b>
LANG0840-1	<i>French, S1 - 1er quadrimestre</i> - ISLV, Marielle MARÉCHAL	B0	Q1	-	-	-	<b>5</b>
SYST0002-2	<i>Modelling and analysis of systems</i> - Guillaume DRION - [15h Proj.]	B0	Q1	30	30	[+]	<b>5</b>
PHYS0904-4	<i>Physics of materials</i> - - Suppl : Luc COURARD, Anne HABRAKEN, Anne MERTENS - [1d FW]	B0	Q2	30	30	[+]	<b>5</b>
MECA0025-3	<i>Fluid Mechanics</i> - Eric DELHEZ - [30h Proj.]	B0	Q2	30	30	[+]	<b>5</b>