

#### 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.

Dans le cadre de son master ingénieur civil mécanicien, tout étudiant doit suivre ou valoriser les 50 crédits de formation commune (y compris stage et TFE), 10 crédits de la liste "Mécanique numérique", 30 crédits de cours au choix et 30 crédits d'une des trois finalités spécialisées.

Idéalement, l'étudiant abordant le master aura acquis les compétences et connaissances correspondant au 40 crédits de cours techniques spécifiques au domaine "Mécanique" organisés dans le cadre de la formation de bachelier ingénieur civil.

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

##### Mechanical design and production

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) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	B1	Q1	30	30	[+]	5
GEST3162-1	<i>Principles of management</i> (english language) - Michael GHILISSEN, François PICHULT, Thierry PIRONET, Didier VAN CAILLIE	B1	Q1	25	25	-	5
MECA0018-2	<i>Manufacturing processes</i> (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW]	B1	Q2	30	-	[+]	5
ASTG0117-1	<i>Integration internship</i> (english language) - Pierre DEWALLEF <b>Corequisite :</b> GEST3162-1 - Principles of management ATFE0013-1 - Travail de fin d'études	B2	TA	-	-	-	5
ATFE0013-1	<i>Master Thesis</i> - COLLÉGIALITÉ, Pierre DUYSINX - [750h Proj.]	B2	TA	-	-	[+]	25

#### 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.]	B1	Q1	30	30	[+]	5
MECA0031-2	<i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.]	B1	Q2	30	20	[+]	5
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [30h Proj.]	B1	Q1	30	30	[+]	5
MECA0010-1	<i>Reliability and stochastic modeling of engineering systems</i> (english language) - Maarten ARNST - [28h Proj.]	B1	Q1	16	16	[+]	5

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

##### Professional focus mechanical Engineering (B1 : 30Cr)

APRI0005-3	<i>Integrated mechanical project</i> - Maarten ARNST, Eric BÉCHET, JeanLuc BOZET, Olivier BRULS, Christophe COLLETTE, Pierre DUYSINX, Tristan GILET, Jean STUTO - [250h Proj., 5d FW]	B1	TA	50	-	[+]	15
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**Corequisite :**

MECA0462-2 - Materials selection

MECA0474-1 - Mechanical Computer-Aided-Design

Choose courses totalling 15 ECTS out of the following : (B1 : 15Cr)

MECA0504-1	<i>Industrial automation</i> - Olivier BRULS, Pierre DUYSINX - [30h Labo.]	B1	Q2	30	-	[+]	5
ELEN0074-1	<i>Sensors, microsensors and instrumentation</i> (english language) - Philippe VANDERBEMDEN - [20h Labo.]	B1	Q2	30	-	[+]	5
SYST0003-1	<i>Linear control systems</i> (english language) - Guillaume DRION - [6h Labo.]	B1	Q1	30	30	[+]	5
MECA0467-1	<i>Turbomachines</i> - - Suppl : Hubert ANTOINE	B1	Q2	30	30	-	5
SYST0020-1	<i>Introduction to microsystems and microtechnology</i> (english language) - Tristan GILET, N... - [4h Labo., 20h Proj.]	B1	Q2	24	18	[+]	5
MECA0127-1	<i>Active Structure</i> (english language) - Christophe COLLETTE	B1	Q1	30	30	-	5

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

MECA0492-3	<i>Vehicle dynamics</i> (english language) - Pierre DUYSINX	B1	Q2	15	10	-	2
MECA0497-3	<i>Vehicle performance</i> (english language) - Mustapha BELHABIB, Pierre DUYSINX - [1d FW]	B1	Q2	25	15	[+]	3
	<b>Corequisite :</b> MECA0498-2 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-3 - Thermal and Electrical Management of vehicles						
MECA0498-3	<i>Internal combustion engines</i> (english language) - Philippe NGENDAKUMANA	B1	Q2	25	15	-	3
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-3 - Thermal and Electrical Management of vehicles						
MECA0499-3	<i>Electric traction motors</i> (english language) - Johan GYSELINCK	B1	Q2	15	10	-	2
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-3 - Internal combustion engines MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-3 - Thermal and Electrical Management of vehicles						
MECA0500-3	<i>Hybrid electric and fuel cell vehicles</i> (english language) - Pierre DUYSINX, Nathalie JOB	B1	Q2	25	15	-	2
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-3 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0501-3 - Thermal and Electrical Management of vehicles						
MECA0501-3	<i>Thermal and Electrical Management of vehicles</i> (english language) - Vincent LEMORT	B1	Q2	15	10	-	3
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-3 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles						
APRI0010-1	<i>Projet intégré de conception en automobile</i> - Pierre DUYSINX - [250h Proj., 5d FW]	B1	TA	50	-	[+]	15

**Professional focus in Advanced ship design (B1 : 30Cr)**

*Notice* : The courses of this focus are exclusively reserved for students who follow the entire program "Advanced ship design" on the two years of master. The courses are however accessible to Erasmus students.

APRI0009-1	<i>Integrated Design Project of Ships, Small Crafts &amp; High Speed vessels</i> (english language) - André HAGE, Philippe RIGO - [150h Proj., 5d FW]	B1	TA	80	-	[+]	<b>15</b>
CNAV0021-1	<i>Ship Theory : Statics and Dynamics</i> (english language) - André HAGE, Philippe RIGO	B1	Q2	50	30	-	<b>5</b>
CNAV0014-3	<i>Ship and offshore structures and production (including 7 days technical visit)</i> (english language) - JeanDavid CAPRACE, Luc COURARD, Philippe RIGO - [7d FW]	B1	Q2	40	60	[+]	<b>7</b>
CNAV0022-1	<i>Ship Equipment and Propulsion Systems</i> (english language) - Pierre DEWALLEF, André HAGE, Philippe NGENDAKUMANA - [1d FW]	B1	Q2	20	20	[+]	<b>3</b>

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

PROJ0011-2	<i>Personal student project</i> (english language) - Pierre DUYSINX, Liesbet GERIS, Grégoire LÉONARD, Quentin LOUVEAUX - [150h Proj.]	B2	Q2	-	-	[+]	<b>5</b>
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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	-	-	<b>3</b>
LANG2978-1	<i>Dutch for engineer, part 2</i> - Claudine COLIN <b>Corequisite :</b> LANG1957-1 - Néerlandais pour l'ingénieur, partim 1	B2	Q2	24	-	-	<b>2</b>
LANG1958-1	<i>German for engineer, Part 1</i> (german language) - Françoise CARL	B2	Q1	36	-	-	<b>3</b>
LANG2979-1	<i>German for engineers, part 2</i> - Françoise CARL, ISLV <b>Corequisite :</b> LANG1958-1 - Allemand pour l'ingénieur, partim 1	B2	Q2	24	-	-	<b>2</b>

[...] Maximum 30 crédits parmi les listes Génie mécanique, Sustainable automotive engineering, Mécatronique 2, Mécanique numérique 2 et Véhicules et 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	(pas organisé en 2017-2018) <i>Advanced production methods</i> - N... - [4h Labo.]	B2	Q2	30	26	[+]	<b>5</b>
MECA0473-1	(pas organisé en 2017-2018) <i>Metallic materials Engineering</i>	B2	Q1	30	30	-	<b>5</b>
MECA0138-1	<i>Welding and non-destructive tests</i> - Nathalie GERLACH, Adnen ben Mahmoud KECHAOU - [30h Labo.]	B2	Q1	30	-	[+]	<b>5</b>
MECA0139-1	<i>Techniques of additive manufacturing and 3D printing</i> - Thierry DORMAL, Anne MERTENS	B2	Q1	30	30	-	<b>5</b>
MECA0035-1	<i>Lubrication and tribology</i> - JeanLuc BOZET	B2	Q1	30	30	-	<b>5</b>
MECA0509-1	<i>Sustainable engineering processes</i> (english language) - Georges DE PELSEMAEKER	B2	Q1	15	30	-	<b>5</b>
GEST0188-1	<i>Determination and Recognition of Quality and Conformity</i> - JeanMichel COMPÈRE, Pierre DEWALLEF <b>Corequisite :</b> MECA0521-1 - Gestion QSHE	B2	Q1	30	-	-	<b>3</b>
MECA0521-1	<i>HSE management, Part 2 : Practical aspects of HSE management</i> - JeanMichel COMPÈRE, Pierre DEWALLEF - [10h Proj., 1d FW]	B2	TA	20	10	[+]	<b>2</b>

**Corequisite :**

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 assessment - Ecodesign</i> (english language) - 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>Element of power Electronics</i> (english language) - Fabrice FREBEL	B2	Q1	30	30	-	5
MECA0517-1	<i>Advanced industrial robotics</i> (english language) - Olivier BRULS - [10h Proj.]	B2	Q2	30	20	[+]	5
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.]	B2	Q1	30	30	[+]	5
<b>Prerequisite :</b>							
MECA0029-1 - Theory of vibration							
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
<b>Corequisite :</b>							
MECA0036-2 - Finite Element Method							
MECA0155-2 - Dynamique des systèmes mécaniques							
MECA0031-2	<i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.]	B2	Q2	30	20	[+]	5
<b>Corequisite :</b>							
MECA0036-2 - Finite Element Method							
MECA0155-2 - Dynamique des systèmes mécaniques							
MECA0023-1	<i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [30h Proj.]	B2	Q1	30	30	[+]	5
<b>Corequisite :</b>							
MECA0036-2 - Finite Element Method							
MECA0155-2 - Dynamique des systèmes mécaniques							
MECA0010-1	<i>Reliability and stochastic modeling of engineering systems</i> (english	B2	Q1	16	16	[+]	5

language) - Maarten ARNST - [28h Proj.]

**Corequisite :**

MECA0155-2 - Dynamique des systèmes mécaniques

MECA0036-2 - Finite Element Method

**Vehicles and transport**

GCIV2177-1	<i>Fundamentals of transportation : sustainable transport</i> (english language) - Mario COOLS	B2	Q1	15	15	-	<b>2</b>
CNAV0020-1	<i>Introduction to naval construction</i> - André HAGE, Philippe RIGO	B2	Q1	40	30	-	<b>5</b>
MECA0063-1	<i>Vehicle Architecture</i> - Pierre DUYSINX - [30h Proj.]	B2	Q2	30	-	[+]	<b>5</b>

**Sustainable automotive engineering**

Remarque : cette liste de cours est réservée aux étudiants inscrits au bloc 1 du master en 2016-2017 et ayant déjà suivi la Finalité spécialisée en génie mécanique.

MECA0492-2	<i>Vehicle dynamics</i> (english language) - Pierre DUYSINX	B1	Q1	15	10	-	<b>2</b>
MECA0493-2	<i>Vehicle aerodynamics</i> (english language) - Grigorios DIMITRIADIS	B1	Q1	15	10	-	<b>2</b>
MECA0494-3	<i>Vehicle components I</i> (english language) - Olivier BRULS, Pierre DUYSINX	B1	Q1	25	15	-	<b>3</b>
MECA0496-2	<i>Materials for automotive applications</i> (english language)	B1	Q1	15	10	-	<b>2</b>
MECA0497-2	<i>Vehicle performance</i> (english language) - Mustapha BELHABIB, Pierre DUYSINX - [1d FW]	B1	Q1	25	15	[+]	<b>3</b>
	<b>Corequisite :</b> MECA0498-2 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-1 - Thermal and Electrical Management of vehicles						
MECA0498-2	<i>Internal combustion engines</i> (english language) - Philippe NGENDAKUMANA	B1	Q1	25	15	-	<b>3</b>
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-1 - Thermal and Electrical Management of vehicles						
MECA0499-2	<i>Electric traction motors</i> (english language) - Johan GYSELINCK	B1	Q1	15	10	-	<b>2</b>
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-2 - Internal combustion engines MECA0500-2 - Hybrid electric and fuel cell vehicles MECA0501-1 - Thermal and Electrical Management of vehicles						
MECA0500-2	<i>Hybrid electric and fuel cell vehicles</i> (english language) - Pierre DUYSINX, Nathalie JOB	B1	Q1	25	15	-	<b>2</b>
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-2 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0501-1 - Thermal and Electrical Management of vehicles						
MECA0501-1	<i>Thermal and Electrical Management of vehicles</i> (english language) - Vincent LEMORT	B1	Q1	15	10	-	<b>3</b>
	<b>Corequisite :</b> MECA0497-2 - Vehicle performance MECA0498-2 - Internal combustion engines MECA0499-2 - Electric traction motors MECA0500-2 - Hybrid electric and fuel cell vehicles						
PROJ0013-1	<i>Innovation project in automotive engineering</i> (english language) - Olivier BRULS, Georges DE PELSEMAEKER, Grigorios DIMITRIADIS,	B1	Q1	20	-	[+]	<b>8</b>

Study programmes 2017-2018  
Faculty of Applied Sciences  
Master in mechanical engineering (120 ECTS)

Pierre DUYSINX, Vincent LEMORT - [80h Proj., 1d FW]

## Additional ECTS Master in mechanical engineering

### Optional courses (B0 : 60Cr)

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