Cycle view of the study programme

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 65 core training credits (including placement and final dissertation), 10 credits from the list "computational mechanics", 15 credits of optional courses and 30 credits from the professional focus.
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.

Focus courses (B1 : 15Cr, B2 : 15Cr)

		Bl	Or	Th	Pr	Au	Cr
MECA0525-1	*Performance and dynamics of vehicles* (english language) - Mustapha BELHABIB, Pierre DUYSINX - [4h Labo., 8h Proj., 1d FW]	B1	Q2	30	15	[+]	**5**
MECA0041-1	*Internal combustion engine* (english language) - *Part 1 Fundamental aspects* - Marc NÉLIS - [1d FW, 15h Proj.] - *Part 2 Application to propulsion* - Marc NÉLIS - [10h Proj., 0,5d FW]	B1	Q2 15 10	 15 10	 [+] [+]		**5**
MECA0063-1	*Vehicle architecture and components* (english language) - Emmanuel TROMME - [30h Proj.]	B1	Q2	30	30	[+]	**5**
MECA0501-1	*Thermal Energy Management in vehicles* (english language) - Vincent LEMORT	B2	Q1	26	26	-	**5**
AERO0001-1	*Aerodynamics* (english language) - Thomas ANDRIANNE, Vincent TERRAPON - [2h Labo., 25h Proj.]	B2	Q1	27	25	[+]	**5**
MECA0527-1	*Electric, hybrid and fuel cell vehicles* (english language) - Pierre DUYSINX - [5h Labo., 15h Proj.]	B2	Q1	30	10	[+]	**5**

Core curriculum compulsory courses (B1 : 35Cr, B2 : 30Cr)

		Bl	Or	Th	Pr	Au	Cr
MECA0029-1	*Theory of vibration* (english language) - Loïc SALLES - [30h Proj.] **Corequisite :** MECA0036-2 - Finite Element Method MECA0155-2 - Dynamique des systèmes mécaniques	B1	Q1	26	26	[+]	**5**
MECA0462-2	*Materials selection* (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	B1	Q1	26	26	[+]	**5**
GEST3162-1	*Principles of management* (english language) - Thomas PIRSOUL, Willem STANDAERT - [25h Proj.]	B1	Q1	30	-	[+]	**5**
MECA0018-2	*Manufacturing processes* (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW]	B1	Q2	30	-	[+]	**5**
PROJ0022-1	*Integrated mechanical engineering project* - *Advanced mechanical design* - Pierre DUPONT - *Integrated mechanical engineering project* - Maarten ARNST, Eric BÉCHET, Olivier BRULS, Christophe COLLETTE, Pierre DUYSINX, Tristan GILET, Jean STUTO - [250h Proj., 5d FW] **Prerequisite :** MECA0444-1 - Conception mécanique **Corequisite :** MECA0018-2 - Manufacturing processes MECA0462-2 - Materials selection	B1	TA 30 10	 15 -	 - [+]		**15**
ATFE0013-1	*Master thesis and internship* - *Master thesis* - Tristan GILET - [750h Proj.] - *Professional integration internship* - Eric BÉCHET **Prerequisite :** MECA0036-2 - Finite Element Method MECA0155-2 - Dynamique des systèmes mécaniques	B2	TA - -	 - -	 [+] -		**30**

Common core courses (B1 : 10Cr, B2 : 15Cr)

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

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 ; theses courses are corequisites of compulsory courses of the master.

MECA0155-2	*Dynamics of mechanical systems* - Loïc SALLES - [20h Proj.]	B1	Q1	26	26	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.] *Notice* : preferential choices for students of the "ADVANCED SHIP DESIGN"	B1	Q2	26	26	[+]	**5**
MECA0027-1	*Structural and multidisciplinary optimization* (english language) - Pierre DUYSINX, Patricia TOSSINGS - Suppl : Michaël BRUYNEEL - [18h Proj.] **Corequisite :** MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method *Notice* : preferential choices for students of the "ADVANCED SHIP DESIGN"	B1	Q1	30	12	[+]	**5**
MECA0031-2	*Kinematics and dynamics of mechanisms* (english language) - Olivier BRULS - [40h Proj.] **Corequisite :** MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B1	Q2	30	20	[+]	**5**
MECA0023-1	*Advanced solid mechanics* (english language) - JeanPhilippe PONTHOT - [30h Proj.] **Corequisite :** MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B1	Q1	26	26	[+]	**5**
MECA0010-1	*Uncertainty quantification and stochastic modelling* (english language) - Maarten ARNST - [28h Proj.] **Corequisite :** MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method	B1	Q1	16	16	[+]	**5**

Choose courses for a total of 15 credits from the Mechanical Engineering, Mechatronics 2, Digital Mechanics 2, and Vehicles and Transport or in the programme for block 1: (B2 : 15Cr)

Students who have not followed the MECA0444-1 course in the ¿Mechanics¿ option of the Civil Engineering programme or acquired the corresponding knowledge and skills must first incorporate this course into their programme; this course is a co-requisite for the compulsory courses for ¿Mechanical Engineering¿ and ¿Sustainable Automotive Engineering¿ focuses.

MECA0444-1	*Mechanical design* - Eric BÉCHET, Pierre DUYSINX, Jean STUTO - [15h Labo., 11h Proj., 0,5d FW]	B2	Q2	30	-	[+]	**5**

Language module

[...] Maximum 5 credits from the language courses programme organised by ISLV in other faculties or from the restricted list below

LANG1957-1	*Dutch for Engineers, part 1* (dutch language) - Claudine COLIN	B2	Q1	36	-	-	**3**
LANG1958-1	*German for Engineers, Part 1* (german language) - Françoise CARL	B2	Q1	36	-	-	**3**
LANG2978-1	*Dutch for Engineers, part 2* (dutch language) - Claudine COLIN **Corequisite :** LANG1957-1 - Néerlandais pour l'ingénieur, partim 1	B2	Q2	24	-	-	**2**
LANG2979-1	*German for Engineers, part 2* (german language) - Françoise CARL **Corequisite :** LANG1958-1 - Allemand pour l'ingénieur, partim 1	B2	Q2	24	-	-	**2**

Mechanical engineering

MECA0473-1	*Metallic materials engineering* - Anne MERTENS	B2	Q1	26	26	-	**5**
MECA0139-1	*Additive manufacturing and 3D printing* (english language) - Anne MERTENS	B2	Q1	26	26	-	**5**
MECA0035-1	(pas organisé en 2024-2025) *Lubrification and tribology*	B2	Q1	26	26	-	**5**
MECA0006-1	*Cooling and low-temperature heating systems* (english language) - Vincent LEMORT - [4h Proj.]	B2	Q2	26	26	[+]	**5**
CHIM0699-2	*Life cycle assessment - Ecodesign* (english language) - Angélique LÉONARD	B2	Q1	10	30	-	**3**
MECA0502-1	*Mechanics of composites* (english language) - Michaël BRUYNEEL	B2	Q1	26	26	-	**5**
MECA0532-1	*Turbomachines* - Koen HILLEWAERT	B2	Q1	26	26	-	**5**
Mecatronic 2							
ELEC0055-2	*Element of power Electronics, Part A* (english language) - Fabrice FREBEL	B2	Q1	30	6	-	**3**
MECA0517-1	*Advanced industrial robotics* (english language) - Olivier BRULS - [10h Proj.]	B2	Q2	30	20	[+]	**5**
INFO0948-2	*Introduction to intelligent robotics* (english language) - Pierre SACRÉ - [80h Proj.]	B2	Q2	30	4	[+]	**5**
INFO0064-2	*Embedded systems* (english language) - Bernard BOIGELOT	B2	Q1	25	20	-	**3**
INFO2055-1	*Embedded systems project* (english language) - Bernard BOIGELOT - [60h Proj.]	B2	Q2	-	-	[+]	**2**
GBIO0012-2	*Biomechanics* (english language) - Davide RUFFONI - [1d FW]	B2	Q1	26	26	[+]	**5**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (english language) - Davide RUFFONI - [4h Labo.]	B2	Q1	26	22	[+]	**5**
GBIO0022-1	*Biomimicry* (english language) - Philippe COMPÈRE, Tristan GILET, Davide RUFFONI - [45h Proj.]	B2	TA	15	-	[+]	**5**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET - [16h Labo., 14h Proj.]	B2	Q2	22	8	[+]	**5**
PROT0430-3	*Biomedical robotics and active prostheses* (english language) - Olivier BRULS	B2	Q1	15	10	-	**3**
MECA0127-1	*Active structures* (english language) - Christophe COLLETTE - Suppl : Gonçalo RODRIGUES **Prerequisite :** SYST0022-1 - Linear Systems Design	B2	Q1	26	26	-	**5**
Computational mechanics 2							
MECA0464-1	*Large deformation of solids* (english language) - Romain BOMAN, JeanPhilippe PONTHOT - [60h Proj.]	B2	Q1	26	26	[+]	**5**
MECA0058-1	*Fracture mechanics, damage and fatigue* (english language) - Ludovic NOELS - [75h Proj.]	B2	Q1	30	10	[+]	**5**
MECA0062-1	*Vibration testing and experimental modal analysis* (english language) - Loïc SALLES - [30h Proj.] **Prerequisite :** MECA0029-1 - Theory of vibration	B2	Q1	26	26	[+]	**5**
MECA0524-1	*CAD & Geometric Algorithms* - Eric BÉCHET - [60h Proj.]	B2	Q1	20	20	[+]	**5**
Vehicles and transport							
MECA0501-1	*Thermal Energy Management in vehicles* (english language) - Vincent LEMORT	B2	Q1	26	26	-	**5**
MECA0063-1	*Vehicle architecture and components* (english language) - Emmanuel TROMME - [30h Proj.]	B2	Q2	30	30	[+]	**5**

GCIV2066-1	(pas organisé en 2024-2025) *Fundamentals of transportation : transport planning* (english language) - Mario COOLS	B2	Q1	15	15	-	**2**
MECA0527-1	*Electric, hybrid and fuel cell vehicles* (english language) - Pierre DUYSINX - [5h Labo., 15h Proj.]	B2	Q1	30	10	[+]	**5**

[...] Courses from B1

[...] Maximum 5 credits in the list of courses from other master's degrees in the faculty of Applied Sciences or du catalogue UNIC.

Bridging courses Master in mechanical engineering

Notice : 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 credits of bridging courses, essentially taken from the list below :

Optional courses (B0 : 30Cr)

[...] Choose 1 to 30 credits from among:

MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0155-2	*Dynamics of mechanical systems* - Loïc SALLES - [20h Proj.]	B0	Q1	26	26	[+]	**5**
MECA0012-6	*Solid mechanics* - Laurent DUCHENE - [15h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0444-1	*Mechanical design* - Eric BÉCHET, Pierre DUYSINX, Jean STUTO - [15h Labo., 11h Proj., 0,5d FW]	B0	Q2	30	-	[+]	**5**
MECA0002-1	*Applied Thermodynamics and Introduction to Heat Engines* - Vincent LEMORT	B0	Q1	26	26	-	**5**
MECA0445-2	*Heat transfer* (english language) - Pierre DEWALLEF, Vincent TERRAPON - [9h Proj.]	B0	Q2	28	24	[+]	**5**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
MECA0001-2	*Mechanics of materials* - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	B0	Q1	27	25	[+]	**5**
LANG0039-2	*English 2, English for Engineering* (english language) - Clara BRERETON, Véronique DOPPAGNE, Pascale DRIANNE, Stéphane GHIJSEN, Philippe JEUKENNE, Martin POLSON, David VANMANSHOVEN - [20h Proj.]	B0	TA	-	30	[+]	**3**
LANG0840-1	*French, S1 - 1er quadrimestre* - ISLV, Marielle MARÉCHAL	B0	Q1	-	-	-	**5**
SYST0002-2	*Introduction to signals and systems* - Guillaume DRION - [15h Proj.]	B0	Q2	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	B0	Q2	26	26	[+]	**5**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	B0	Q2	26	26	[+]	**5**

Bridging courses Master in mechanical engineering

Notice : 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 credits of bridging courses, essentially taken from the list below :

Optional courses (B0 : 60Cr)

[...] Choose 31 to 60 credits from:

MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0155-2	*Dynamics of mechanical systems* - Loïc SALLES - [20h Proj.]	B0	Q1	26	26	[+]	**5**
MECA0012-6	*Solid mechanics* - Laurent DUCHENE - [15h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0444-1	*Mechanical design* - Eric BÉCHET, Pierre DUYSINX, Jean STUTO - [15h Labo., 11h Proj., 0,5d FW]	B0	Q2	30	-	[+]	**5**
MECA0002-1	*Applied Thermodynamics and Introduction to Heat Engines* - Vincent LEMORT	B0	Q1	26	26	-	**5**
MECA0445-2	*Heat transfer* (english language) - Pierre DEWALLEF, Vincent TERRAPON - [9h Proj.]	B0	Q2	28	24	[+]	**5**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
MECA0001-2	*Mechanics of materials* - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	B0	Q1	27	25	[+]	**5**
LANG0039-2	*English 2, English for Engineering* (english language) - Clara BRERETON, Véronique DOPPAGNE, Pascale DRIANNE, Stéphane GHIJSEN, Philippe JEUKENNE, Martin POLSON, David VANMANSHOVEN - [20h Proj.]	B0	TA	-	30	[+]	**3**
LANG0840-1	*French, S1 - 1er quadrimestre* - ISLV, Marielle MARÉCHAL	B0	Q1	-	-	-	**5**
SYST0002-2	*Introduction to signals and systems* - Guillaume DRION - [15h Proj.]	B0	Q2	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	B0	Q2	26	26	[+]	**5**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	B0	Q2	26	26	[+]	**5**

Bridging courses M. mecha. engineer. (gen.)

MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0155-2	*Dynamics of mechanical systems* - Loïc SALLES - [20h Proj.]	B0	Q1	26	26	[+]	**5**
MECA0012-6	*Solid mechanics* - Laurent DUCHENE - [15h Proj.]	B0	Q2	26	26	[+]	**5**
MECA0444-1	*Mechanical design* - Eric BÉCHET, Pierre DUYSINX, Jean STUTO - [15h Labo., 11h Proj., 0,5d FW]	B0	Q2	30	-	[+]	**5**
MECA0002-1	*Applied Thermodynamics and Introduction to Heat Engines* - Vincent LEMORT	B0	Q1	26	26	-	**5**
MECA0445-2	*Heat transfer* (english language) - Pierre DEWALLEF, Vincent TERRAPON - [9h Proj.]	B0	Q2	28	24	[+]	**5**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	B0	Q1	20	20	-	**4**
MECA0001-2	*Mechanics of materials* - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	B0	Q1	27	25	[+]	**5**
LANG0039-2	*English 2, English for Engineering* (english language) - Clara BRERETON, Véronique DOPPAGNE, Pascale DRIANNE, Stéphane GHIJSEN, Philippe JEUKENNE, Martin POLSON, David VANMANSHOVEN - [20h Proj.]	B0	TA	-	30	[+]	**3**
LANG0840-1	*French, S1 - 1er quadrimestre* - ISLV, Marielle MARÉCHAL	B0	Q1	-	-	-	**5**
SYST0002-2	*Introduction to signals and systems* - Guillaume DRION - [15h Proj.]	B0	Q2	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	B0	Q2	26	26	[+]	**5**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	B0	Q2	26	26	[+]	**5**