Block view of the study programme

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Block 1

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's degree in Mechanical Engineering, each student must take or validate the 70 credits of the common core (including internship and Master's thesis), 10 credits of optional courses, 10 credits from the Mechanical Engineering, Mechatronics 2, Computational Mechanics 2 and Vehicles and Transport lists or from the block 1 programme, and 30 credits of the research focus.
Ideally, students starting the Master's programme will have acquired the skills and knowledge corresponding to the 40 credits of technical courses specific to the "Mechanical" field, organised within the Bachelor's degree in Civil Engineering.

Core curriculum compulsory courses

MECA0029-1	*Theory of vibration* (english language) - Loïc SALLES - [30h Proj.] **Corequisite :** MECA0036-2 - Finite Element Method MECA0155-2 - Dynamique des systèmes mécaniques	Q1	26	26	[+]	**5**
MECA0462-2	*Materials selection* (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]	Q1	26	26	[+]	**5**
GEST3162-1	*Principles of management* (english language) - Michaël PARMENTIER, Willem STANDAERT - [25h Proj.]	Q1	30	-	[+]	**5**
MECA0018-2	*Manufacturing processes* (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW]	Q2	30	-	[+]	**5**
SYST0022-1	*Linear Systems Design* (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.]	Q2	26	26	[+]	**5**

[...] Choose one course from PROJ0022-1 and PROJ0023-1.

PROJ0022-1	*Integrated mechanical engineering project* - *Advanced mechanical design* - Pierre DUPONT - *Integrated mechanical engineering project* - Eric BÉCHET, Olivier BRULS, Pierre DUYSINX, Tristan GILET, Loïc SALLES - [250h Proj., 5d FW] **Prerequisite :** MECA0444-1 - Conception mécanique **Corequisite :** MECA0018-2 - Manufacturing processes MECA0462-2 - Materials selection	TA	30 10	15 -	- [+]	**15**
PROJ0023-1	*Integrated project in mechanical engineering (Service Learning)* - *Advanced mechanical design* - Pierre DUPONT - *Integrated project in mechanical engineering* - Eric BÉCHET, Olivier BRULS, Pierre DUYSINX, Tristan GILET, Loïc SALLES - [250h Proj., 5d FW]	TA	30 10	15 -	- [+]	**15**

Common core courses

Choose courses totalling 10 credits out of the following :

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.]	Q1	26	26	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
MECA0027-1	*Structural and multidisciplinary optimization* (english language) - Pierre DUYSINX, Patricia TOSSINGS - [18h Proj.] **Corequisite :**	Q1	30	12	[+]	**5**

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

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	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	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	Q1	16	16	[+]	**5**

Focus courses

Choose 10 credits among:

MECA0525-1	*Performance and dynamics of vehicles* (english language) - Pierre DUYSINX - [4h Labo., 8h Proj., 1d FW]	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]	Q2	 15 10	 15 10	 [+] [+]	**5**
MECA0063-1	*Vehicle architecture and components* (english language) - Emmanuel TROMME - [30h Proj.]	Q2	30	30	[+]	**5**

Block 2

Core curriculum compulsory courses

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	TA	 - -	 - -	 [+] -	**30**

Common core courses

Choose courses for a total of 10 credits from the Mechanical Engineering, Mechatronics 2, Computational Mechanics 2 and Vehicles and Transport lists, or from the block 1 programme.

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 - [15h Labo., 11h Proj., 0,5d FW]	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	Q1	36	-	-	**3**
LANG1958-1	*German for Engineers, Part 1* (german language) - Françoise CARL	Q1	36	-	-	**3**
LANG2978-1	*Dutch for Engineers, part 2* (dutch language) - Claudine COLIN **Corequisite :**	Q2	24	-	-	**2**

	LANG1957-1 - Néerlandais pour l'ingénieur, partim 1					
LANG2979-1	*German for Engineers, part 2* (german language) - Françoise CARL **Corequisite :** LANG1958-1 - Allemand pour l'ingénieur, partim 1	Q2	24	-	-	**2**
Mechanical engineering						
MECA0035-1	(pas organisé en 2026-2027) *Lubrification and tribology*	Q1	26	26	-	**5**
MECA0006-1	*Cooling and low-temperature heating systems* (english language) - Vincent LEMORT - [4h Proj., 1d FW]	Q2	26	26	[+]	**5**
CHIM0699-2	*Life cycle assessment - Ecodesign* (english language) - Sylvie GROSLAMBERT, Angélique LÉONARD - [30h Proj.]	Q1	10	8	[+]	**3**
MECA0502-1	*Mechanics of composites* (english language) - Michaël BRUYNEEL	Q1	26	26	-	**5**
MECA0532-1	*Turbomachines* - Koen HILLEWAERT	Q2	26	26	-	**5**
MECA0533-1	*Technology of offshore wind structures* (english language) **Prerequisite :** MECA0462-2 - Materials selection MECA0155-2 - Dynamique des systèmes mécaniques	Q1	26	26	-	**5**
MECA0534-1	*Fluid structures interactions of offshore environment* (english language) - Thomas ANDRIANNE - [12h Labo.] **Prerequisite :** MECA0025-3 - Mécanique des fluides MECA0029-1 - Theory of vibration	Q1	20	16	[+]	**5**
MECA0535-1	*Structural health monitoring* (english language) **Prerequisite :** MECA0029-1 - Theory of vibration	Q1	26	26	-	**5**
Mecatronic 2						
ELEC0055-2	*Element of power Electronics, Part A* (english language) - Fabrice FREBEL	Q1	30	6	-	**3**
GBIO0012-2	*Biomechanics* (english language) - Davide RUFFONI - [1d FW]	Q1	26	26	[+]	**5**
MECA0516-1	*Mechanical properties of biological and bioinspired materials* (english language) - Davide RUFFONI - [4h Labo.]	Q1	26	22	[+]	**5**
GBIO0022-1	*Biomimicry* (english language) - Philippe COMPÈRE, Tristan GILET, Davide RUFFONI - [45h Proj.]	TA	15	-	[+]	**5**
MECA0008-1	*Microfluidics* (english language) - Tristan GILET - [16h Labo., 14h Proj.]	Q2	22	8	[+]	**5**
PROT0430-3	*Biomedical robotics and active prostheses* (english language) - Olivier BRULS	Q1	15	10	-	**3**
Computational mechanics 2						
MECA0464-1	*Large deformation of solids* (english language) - Romain BOMAN, JeanPhilippe PONTHOT - [60h Proj.]	Q1	26	26	[+]	**5**
MECA0058-1	*Fracture mechanics, damage and fatigue* (english language) - Ludovic NOELS - [75h Proj.]	Q1	30	10	[+]	**5**
MECA0524-1	*CAD & Geometric Algorithms* - Eric BÉCHET - [60h Proj.]	Q1	20	20	[+]	**5**
AERO0015-1	*Mechanical design of turbomachinery* (english language) - Loïc SALLES - [30h Proj.]	Q1	26	26	[+]	**5**
Vehicles and transport						
GCIV2066-1	*Fundamentals of transportation : transport planning* (english language) - Mario COOLS	Q1	15	15	-	**2**

[...] Courses from B1

[...] Maximum 10 crédits parmi la liste ci-dessous :

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

Focus courses

Choose 20 credits from:

MECA0501-1	*Thermal Energy Management in vehicles* (english language) - Vincent LEMORT - [1d FW]	Q1	26	26	[+]	**5**
AERO0001-1	*Aerodynamics* (english language) - Thomas ANDRIANNE, Vincent TERRAPON - [2h Labo., 25h Proj.]	Q1	27	25	[+]	**5**
MECA0527-1	*Electric, hybrid and fuel cell vehicles* (english language) - Pierre DUYSINX - [5h Labo., 15h Proj.]	Q1	30	10	[+]	**5**
ELEC0431-2	*Electromagnetic energy conversion* (english language) - Christophe GEUZAINE - [15h Labo.]	Q2	30	15	[+]	**5**
MECA0062-1	*Vibration testing and experimental modal analysis* (english language) - Loïc SALLES - [30h Proj.]	Q1	26	26	[+]	**5**

Bloc d'aménagement du programme de l'année

Bridging courses Master in mechanical engineering

Optional courses

Le programme de chaque étudiant sera déterminé par le jury en fonction de sa formation antérieure. Si un candidat à l'admission ne maitrise pas certains prérequis, son programme pourra comporter jusqu'à 60 crédits de cours supplémentaires essentiellement issus de la liste ci-dessous :
Pour les porteurs d'un grade de master en sciences industrielles ou de master en sciences de l'ingénieur industriel (toutes finalités) le volume du complément de programme pourra être réduit à 30 crédits.

INFO0952-1	*Additional information technology* - Pierre GEURTS - [30h AUTR]	Q1	16	16	[+]	**5**
MECA0036-2	*Finite Element Method* (english language) - JeanPhilippe PONTHOT - [40h Proj.]	Q2	26	26	[+]	**5**
MECA0155-2	*Dynamics of mechanical systems* - Loïc SALLES - [20h Proj.]	Q1	26	26	[+]	**5**
MECA0012-6	*Solid mechanics* - Laurent DUCHENE - [15h Proj.]	Q2	26	26	[+]	**5**
MECA0444-1	*Mechanical design* - Eric BÉCHET, Pierre DUYSINX - [15h Labo., 11h Proj., 0,5d FW]	Q2	30	-	[+]	**5**
MECA0002-1	*Applied Thermodynamics and Introduction to Heat Engines* - Vincent LEMORT	Q1	26	26	-	**5**
MECA0445-2	*Heat transfer* (english language) - Pierre DEWALLEF, Vincent TERRAPON - [9h Proj.]	Q2	28	24	[+]	**5**
MATH0006-3	*Introduction to numerical analysis* (english language) - Quentin LOUVEAUX	Q1	20	20	-	**5**
MECA0001-2	*Mechanics of materials* - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]	Q1	27	25	[+]	**5**
SYST0002-2	*Introduction to signals and systems* - Guillaume DRION, Alessio FRANCI - [15h Proj.]	Q2	26	26	[+]	**5**
PHYS0904-4	*Physics of materials* - Luc COURARD, Anne MERTENS - [1d FW]	Q2	26	26	[+]	**5**
MECA0025-3	*Fluid Mechanics* - Eric DELHEZ - [30h Proj.]	Q2	26	26	[+]	**5**