

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.

Dans le cadre de son master ingénieur civil mécanicien, tout étudiant doit suivre ou valoriser les 65 crédits de formation commune (y compris stage et TFE), 10 crédits de la liste "Mécanique numérique", 15 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 aux 40 crédits de cours techniques spécifiques au domaine "Mécanique" organisés dans le cadre de la formation de bachelier ingénieur civil.

Focus courses

| | | | | | | |
|------------|--|----|----|----|-----|---|
| MECA0504-1 | <i>Industrial automation</i> - Olivier BRULS, Pierre DUYSINX - Suppl : Nathalie VETCOUR - [30h Labo.] | Q2 | 30 | - | [+] | 5 |
| ELEN0074-1 | <i>Sensors, microsensors and instrumentation</i> (english language) - Philippe VANDERBEMDEN - [20h Labo.] | Q2 | 30 | - | [+] | 5 |
| SYST0020-1 | <i>Introduction to microsystems and microtechnology</i> (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.] | Q2 | 24 | 18 | [+] | 5 |

Cours obligatoires du tronc commun

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|------------|---|----|----|----|-----|----|
| MECA0029-1 | <i>Theory of vibration</i> (english language) - Loïc SALLES - [30h Proj.] Corequisite : MECA0036-2 - Finite Element Method MECA0155-2 - Dynamique des systèmes mécaniques | Q1 | 26 | 26 | [+] | 5 |
| MECA0462-2 | <i>Materials selection</i> (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW] | Q1 | 26 | 26 | [+] | 5 |
| GEST3162-1 | <i>Principles of management</i> (english language) - Michaël PARMENTIER - [25h Proj.] | Q1 | 30 | - | [+] | 5 |
| MECA0018-2 | <i>Manufacturing processes</i> (english language) - Yves MARCHAL - [15h Labo., 11h Proj., 0,5d FW] | Q2 | 30 | - | [+] | 5 |
| PROJ0022-1 | <i>Integrated mechanical engineering project</i> - <i>Advanced mechanical design</i> - <i>Integrated mechanical engineering project</i> - Maarten ARNST, Eric BÉCHET, Olivier BRULS, Christophe COLLETTE, Pierre DUYSINX, Tristan GILET, Jean STUTO - [250h Proj., 5d FW] | TA | 30 | 15 | - | 15 |
| | | | 10 | - | [+] | |

Cours au choix du tronc commun

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

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|------------|--|----|----|----|-----|---|
| MECA0155-2 | <i>Dynamics of mechanical systems</i> - Loïc SALLES - [20h Proj.] | Q1 | 26 | 26 | [+] | 5 |
| MECA0036-2 | <i>Finite Element Method</i> (english language) - JeanPhilippe PONTHOT - [40h Proj.] | Q2 | 26 | 26 | [+] | 5 |

Notice : preferential choices for students of the "ADVANCED SHIP DESIGN"

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|------------|--|----|----|----|-----|---|
| MECA0027-1 | <i>Structural and multidisciplinary optimization</i> (english language) - Pierre DUYSINX, Patricia TOSSINGS - Suppl : Michaël BRUYNEEL - [18h Proj.] Corequisite : MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method | Q1 | 30 | 12 | [+] | 5 |
|------------|--|----|----|----|-----|---|

Notice : preferential choices for students of the "ADVANCED SHIP DESIGN"

| | | | | | | |
|------------|---|----|----|----|-----|---|
| MECA0031-2 | <i>Kinematics and dynamics of mechanisms</i> (english language) - Olivier BRULS - [40h Proj.] Corequisite : MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method | Q2 | 30 | 20 | [+] | 5 |
| MECA0023-1 | <i>Advanced solid mechanics</i> (english language) - JeanPhilippe PONTHOT - [30h Proj.] Corequisite : MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method | Q1 | 26 | 26 | [+] | 5 |
| MECA0010-1 | <i>Uncertainty quantification and stochastic modelling</i> (english language) - Maarten ARNST - [28h Proj.] Corequisite : MECA0155-2 - Dynamique des systèmes mécaniques MECA0036-2 - Finite Element Method | Q1 | 16 | 16 | [+] | 5 |

Block 2

Focus courses

| | | | | | | |
|------------|---|----|----|----|-----|---|
| SYST0022-1 | <i>Linear Systems Design</i> (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.] | Q2 | 26 | 26 | [+] | 5 |
| MECA0127-1 | <i>Active structures</i> (english language) - Christophe COLLETTE - Suppl : Gonçalo RODRIGUES | Q1 | 26 | 26 | - | 5 |
| MECA0517-1 | <i>Advanced industrial robotics</i> (english language) - Olivier BRULS - [10h Proj.] | Q2 | 30 | 20 | [+] | 5 |

Cours obligatoires du tronc commun

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|------------|---|----|---|---|-----|-----------|
| ATFE0013-1 | <i>Master thesis and internship</i> - <i>Master thesis</i> - Tristan GILET - [750h Proj.] - <i>Professional integration internship</i> - Eric BÉCHET Prerequisite : MECA0036-2 - Finite Element Method MECA0155-2 - Dynamique des systèmes mécaniques | TA | | | | 30 |
| | | | - | - | [+] | |
| | | | - | - | - | |

Cours au choix du tronc commun

Choisir des cours pour un total de 15 crédits dans les listes Génie mécanique, Mécatronique 2, Mécanique numérique 2 et Véhicules et transports ou dans le programme du bloc 1 :

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.

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|------------|--|----|----|---|-----|---|
| MECA0444-1 | <i>Mechanical design</i> - Eric BÉCHET, Pierre DUYSINX, Jean STUTO - [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

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

Mechanical engineering

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|------------|---|----|----|----|-----|---|
| MECA0473-1 | <i>Metallic materials engineering</i> - Anne MERTENS | Q1 | 26 | 26 | - | 5 |
| MECA0139-1 | <i>Additive manufacturing and 3D printing</i> (english language) - Anne MERTENS | Q1 | 26 | 26 | - | 5 |
| MECA0035-1 | (pas organisé en 2024-2025) <i>Lubrication and tribology</i> | Q1 | 26 | 26 | - | 5 |
| MECA0006-1 | <i>Cooling and low-temperature heating systems</i> (english language) - Vincent LEMORT - [4h Proj.] | Q2 | 26 | 26 | [+] | 5 |
| CHIM0699-2 | <i>Life cycle assessment - Ecodesign</i> (english language) - Angélique LÉONARD | Q1 | 10 | 30 | - | 3 |
| MECA0502-1 | <i>Mechanics of composites</i> (english language) - Michaël BRUYNEEL | Q1 | 26 | 26 | - | 5 |
| MECA0532-1 | <i>Turbomachines</i> - Koen HILLEWAERT | Q1 | 26 | 26 | - | 5 |

Mecatronic 2

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|------------|--|----|----|----|-----|---|
| ELEC0055-2 | <i>Element of power Electronics, Part A</i> (english language) - Fabrice FREBEL | Q1 | 30 | 6 | - | 3 |
| MECA0517-1 | <i>Advanced industrial robotics</i> (english language) - Olivier BRULS - [10h Proj.] | Q2 | 30 | 20 | [+] | 5 |
| INFO0948-2 | <i>Introduction to intelligent robotics</i> (english language) - Pierre SACRÉ - [80h Proj.] | Q2 | 30 | 4 | [+] | 5 |
| INFO0064-2 | <i>Embedded systems</i> (english language) - Bernard BOIGELOT | Q1 | 25 | 20 | - | 3 |
| INFO2055-1 | <i>Embedded systems project</i> (english language) - Bernard BOIGELOT - [60h Proj.] | Q2 | - | - | [+] | 2 |
| GBIO0012-2 | <i>Biomechanics</i> (english language) - Davide RUFFONI - [1d FW] | Q1 | 26 | 26 | [+] | 5 |
| MECA0516-1 | <i>Mechanical properties of biological and bioinspired materials</i> (english language) - Davide RUFFONI - [4h Labo.] | Q1 | 26 | 22 | [+] | 5 |
| GBIO0022-1 | <i>Biomimicry</i> (english language) - Philippe COMPÈRE, Tristan GILET, Davide RUFFONI - [45h Proj.] | TA | 15 | - | [+] | 5 |
| MECA0008-1 | <i>Microfluidics</i> (english language) - Tristan GILET - [16h Labo., 14h Proj.] | Q2 | 22 | 8 | [+] | 5 |
| PROT0430-3 | <i>Biomedical robotics and active prostheses</i> (english language) - Olivier BRULS (Odd years) | Q1 | 15 | 10 | - | 3 |
| MECA0127-1 | <i>Active structures</i> (english language) - Christophe COLLETTE - Suppl : Gonçalo RODRIGUES Prerequisite : SYST0022-1 - Linear Systems Design | Q1 | 26 | 26 | - | 5 |

Computational mechanics 2

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|------------|--|----|----|----|-----|---|
| MECA0464-1 | <i>Large deformation of solids</i> (english language) - Romain BOMAN, JeanPhilippe PONTHOT - [60h Proj.] | Q1 | 26 | 26 | [+] | 5 |
| MECA0058-1 | <i>Fracture mechanics, damage and fatigue</i> (english language) - Ludovic NOELS - [75h Proj.] | Q1 | 30 | 10 | [+] | 5 |
| MECA0062-1 | <i>Vibration testing and experimental modal analysis</i> (english language) - Loïc SALLES - [30h Proj.] Prerequisite : MECA0029-1 - Theory of vibration | Q1 | 26 | 26 | [+] | 5 |
| MECA0524-1 | <i>CAD & Geometric Algorithms</i> - Eric BÉCHET - [60h Proj.] | Q1 | 20 | 20 | [+] | 5 |

Vehicles and transport

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|------------|---|----|----|----|-----|---|
| MECA0501-1 | <i>Thermal Energy Management in vehicles</i> (english language) - Vincent LEMORT | Q1 | 26 | 26 | - | 5 |
| MECA0063-1 | <i>Vehicle architecture and components</i> (english language) - Emmanuel TROMME - [30h Proj.] | Q2 | 30 | 30 | [+] | 5 |

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|------------|---|----|----|----|-----|---|
| GCIV2066-1 | <i>Fundamentals of transportation : transport planning</i> (english language) - Mario COOLS | Q1 | 15 | 15 | - | 2 |
| MECA0527-1 | <i>Electric, hybrid and fuel cell vehicles</i> (english language) - Pierre DUYSINX - [5h Labo., 15h Proj.] | 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. | | | | | |

Bloc d'aménagement du programme de l'année

Additional ECTS Master in mechanical engineering

Optional courses

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 :

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