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.

Within the framework of their Master in Electro-mechanical Engineering, all students must follow or validate the 65 credits of joint training (including placement and final year dissertation), the 25 credits of optional courses, and the 30 credits of the professional focus.

Ideally, students studying for the master's degree will have acquired the competences and knowledge corresponding to the 50 credits of technical courses specific to the field of 'Mechanics' and 'Electricity', taught within the framework of the Bachelor in Civil Engineering.

Compulsory courses (B1 : 30Cr, B2 : 35Cr)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Theory</th>
<th>Practical</th>
<th>Project</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECA0006-1</td>
<td>Thermal Machines and Systems - Vincent LEMORT</td>
<td>5</td>
<td>26</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHIM9315-1</td>
<td>Sustainable management of fuels: supply, synthesis and use - Angélique LÉONARD</td>
<td>5</td>
<td>50</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHIM0695-2</td>
<td>Introduction to the modelling of chemical processes (english language) - Grégoire LÉONARD</td>
<td>5</td>
<td>20</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELEC0447-1</td>
<td>Analysis of electric power and energy systems (english language) - Bertrand CORNELUSSE, Louis WEHENKEL</td>
<td>5</td>
<td>26</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECA0450-3</td>
<td>Renewable energies (english language) - Pierre DEWALLEF - [24h Proj., 1d FW]</td>
<td>5</td>
<td>24</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECA0037-1</td>
<td>Thermal power stations and cogeneration - Pierre DEWALLEF - [12h Proj.,]</td>
<td>5</td>
<td>24</td>
<td>24</td>
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<td></td>
</tr>
</tbody>
</table>

Corequisite:
MECA0002-1 - Thermodynamique appliquée et introduction aux machines thermiques

Optional courses (B1 : 30Cr, B2 : 25Cr)

Single focus (B1 : 30Cr)

Professional focus in energetics (B1 : 30Cr)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Theory</th>
<th>Practical</th>
<th>Project</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYST0003-1</td>
<td>Linear control systems (english language) - Theory - Guillaume DRION</td>
<td>5</td>
<td>26</td>
<td>6</td>
<td></td>
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<tr>
<td></td>
<td>- Control system design in time domain and frequency domain - Guillaume DRION - Labo.]</td>
<td>20</td>
<td>20</td>
<td>[+]</td>
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<td></td>
</tr>
<tr>
<td>MECA0529-1</td>
<td>Hydraulic turbomachines - Koen HILLEWAERT - [8h Ex., 2h Labo.]</td>
<td>3</td>
<td>20</td>
<td>-</td>
<td>[+]</td>
<td></td>
</tr>
<tr>
<td>MECA0530-1</td>
<td>Gas-powered turbomachines - Koen HILLEWAERT - [6h Ex.]</td>
<td>3</td>
<td>24</td>
<td>-</td>
<td>[+]</td>
<td></td>
</tr>
<tr>
<td>MECA0041-2</td>
<td>Internal combustion engine, Part 1 Fundamental aspects (english language) - Marc NÉLIS - [1d FW, 15h Proj.]</td>
<td>3</td>
<td>15</td>
<td>15</td>
<td>[+]</td>
<td></td>
</tr>
</tbody>
</table>

Corequisite:
MECA0002-1 - Thermodynamique appliquée et introduction aux machines thermiques

ELEC0055-2  | Element of power Electronics , Part A (english language) - Fabrice FREBEL    | 3       | 30     | 6        |         |

MECA0531-1  | Experimental Evaluation of Components and Processes (english language) - Pierre DEWALLEF, Samuel GENDEBIEN | 3       | 2      | -        | -      |

APRI0003-2  | Energetics Integrated Project - Pierre DEWALLEF, Samuel GENDEBIEN, Vincent LEMORT - [5d FW] | 10      | 30     | 80       | [+]    |
Choose courses totalling 25 credits from the elective courses list. (B2 : 25Cr)

Choose one course from the course's programme of other master of the Faculty of Applied Sciences (with the approval of the cycle's Jury president)

Students who have not followed the courses MECA0002-1, ELEC0053-2 and ELEC0431-2 from the bachelor in civil engineering programme or acquired the equivalent knowledge and skills have to choose in priority these three courses in their study programme; theses courses are corequisites of compulsory courses of the master.

MECA0002-1  Applied Thermodynamics and Introduction to Heat Engines - Vincent LEMORT  
B2  Q1  26  - 5

ELEC0053-2  Electric circuits - Bertrand CORNÉLUSSE  
B2  Q2  26  - 5

ELEC0431-2  Electromagnetic energy conversion (english language) - Suppl : François HENROTTE - [15h Labo.]  
B2  Q2  30  15 5

Language courses

Maximum five language course credits from among the list below or from among the ISLV courses in other faculties

LANG1957-1  Dutch for Engineers, part 1 (dutch language) - Claudine COLIN  
B2  Q1  36  - 3

LANG1958-1  German for engineer, Part 1 (german language) - Françoise CARL  
B2  Q1  36  - 3

LANG2978-1  Dutch for engineer, part 2 - Claudine COLIN  
B2  Q2  24  - 2

LANG2979-1  German for engineers, part 2 - Françoise CARL  
B2  Q2  24  - 2

Power production, transport and distribution

CHIM0664-1  Electrochemical energy conversion and storage (english language) - theory - Nathalie JOB  
B2  Q1  15  - 3

- lab - Nathalie JOB - [15h Labo.] - -  [-]

GENU0018-3  Nuclear Engineering and Nuclear Power Plant Technology - Pierre DEWALLEF  
B2  Q1  26  - 5

Corequisite :  
MECA0037-1 - Centrales thermiques et cogénération

ELEN0445-1  Microgrids (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW]  
B2  Q1  18  18 5

MECA0041-3  Internal combustion engine, Part 2 Application to propulsion (english language) - Marc NELIS - [10h Proj., 0,5d FW]  
B2  Q2  10  10 5

PROJ0020-1  Innovation for sustainable engineering (english language) - Georges DE PELSEMAEKER, Pierre DUYSINX - [100h Proj.]  
B2  Q1  10  - 5

Rational use of energy

ARCH3272-2  Building performance simulation and monitoring, Part 1 (english language) - Shady ATTIA  
B2  Q1  15  15 3

MECA0034-1  Rational use of energy in buildings - Vincent LEMORT  
B2  Q1  26  26 5

ELEN0074-1  Sensors, microsensors and instrumentation (english language) - Philippe VANDERBEMDEN - [20h Labo.]  
B2  Q2  30  - 5

MECA0501-1  Thermal Energy Management in vehicles (english language) - Vincent LEMORT  
B2  Q1  26  26 5

Advanced modeling and simulation
Study programmes 2022-2023
Faculty of Applied Sciences
Master of Science (MSc) in Electromechanical Engineering

ELEC0041-1  Modelling and design of electromagnetic systems (english language) - Suppl : Ruth VAZQUEZ SABARIEGO  B2 Q2 26 26 - 5
MECA0032-1  Flow in turbomachines (english language) - Koen HILLEWAERT - [60h Proj.]  B2 Q1 26 26 [+ 5
MATH0461-2  Introduction to numerical optimization (english language) - Quentin LOUVEAUX - [25h Proj.]  B2 Q1 30 20 [+ 5
MECA0027-1  Structural and multidisciplinary optimization (english language) - Pierre DUYSINX, Patricia TOSSINGS - [18h Proj.]  B2 Q1 30 12 [+ 5

Other optional courses

ELEC0018-1  Energy market (english language) - Damien ERNST  B2 Q1 39 13 - 5
MECA0462-2  Materials selection (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW]  B2 Q1 26 26 [+ 5
MECA0527-1  Electric, hybrid and fuel cell vehicles (english language) - Pierre DUYSINX - [5h Labo., 15h Proj.]  B2 Q1 30 10 [+ 5

Additional ECTS Master in electro-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)

MECA0445-2  Heat transfer (english language) - Pierre DEWALLEF, Vincent TERRAPON - [4h Labo., 9h Proj.]  B0 Q2 28 24 [+ 5
MECA0012-6  Solid mechanics - Laurent DUCHENE - [15h Proj.]  B0 Q2 26 26 [+ 5
ELEC0052-2  Mesures électriques : fondements et applications - Philippe VANDERBEMDEN - [24h Labo.]  B0 Q1 30 6 [+ 5
MECA0025-3  Fluid Mechanics - Eric DELHEZ - [30h Proj.]  B0 Q2 26 26 [+ 5
MECA0036-2  Finite Element Method (english language) - JeanPhilippe PONTHOT - [40h Proj.]  B0 Q2 26 26 [+ 5
MECA0155-2  Dynamics of mechanical systems - [20h Proj.]  B0 Q1 26 26 [+ 5
PHYS0904-4  Physics of materials - Luc COURARD, Anne MERTENS - [1d FW]  B0 Q2 26 26 [+ 5
MATH0006-3  Introduction to numerical analysis (english language) - Quentin LOUVEAUX  B0 Q1 20 20 - 4
LANG0039-2  English 2, English for Engineering (english language) - Véronique DOPPAGNE, Pascale DRIANNE, Christine FILOT, Philippe JEUKENNE, Martin POLSON - [20h Proj.]  B0 TA - 30 [+ 3

[...] Choose maximum 13 credits to complete the curriculum