

Cycle view of the study programme

B1 Or Th Pr Au Cr

Programme only open to students enrolled before the 2023-2024 academic year.

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)

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|------------|---|----|----|----|----|-----|----|
| MECA0006-1 | <i>Cooling and low-temperature heating systems</i> (english language) - Vincent LEMORT - [4h Proj.] | B1 | Q2 | 26 | 26 | [+] | 5 |
| CHIM9315-1 | <i>Sustainable management of fuels: supply, synthesis and use</i> - Angélique LÉONARD, Grégoire LÉONARD - [1d FW, 10h Proj.] | B1 | Q1 | 50 | - | [+] | 5 |
| CHIM0695-2 | <i>Modelling of chemical & energy processes</i> (english language) - Grégoire LÉONARD | B1 | Q1 | 20 | 32 | - | 5 |
| ELEC0447-1 | <i>Analysis of electric power and energy systems</i> (english language) - Bertrand CORNÉLUSSE, Louis WEHENKEL - [1d FW] | B1 | Q1 | 26 | 26 | [+] | 5 |
| MECA0450-3 | <i>Renewable Energy System Design</i> (english language) - Pierre DEWALLEF - [24h Proj., 1d FW] | B1 | Q1 | 24 | 12 | [+] | 5 |
| MECA0037-1 | <i>Thermal Power Plants and Combined Heat and Power</i> (english language) - Pierre DEWALLEF - [12h Proj.] | B1 | Q2 | 24 | 24 | [+] | 5 |
| | Corequisite : MECA0002-1 - Thermodynamique appliquée et introduction aux machines thermiques | | | | | | |
| ATFE2003-1 | <i>Master thesis and internship</i> - <i>Master thesis</i> - COLLÉGIALITÉ, Vincent LEMORT - [750h Proj.] - <i>Professional integration internship</i> - Pierre DEWALLEF | B2 | TA | | | | 30 |
| GEST3162-1 | <i>Principles of management</i> (english language) - François PICHault, Willem STANDAERT - [25h Proj.] | B2 | Q1 | 30 | - | [+] | 5 |

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

Single focus (B1 : 30Cr)

Professional focus in energetics (B1 : 30Cr)

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|------------|--|----|----|----|----|-----|----|
| SYST0022-1 | <i>Linear Systems Design</i> (english language) - Guillaume DRION, Pierre SACRÉ - [15h Proj.] | B1 | Q2 | 26 | 26 | [+] | 5 |
| MECA0532-1 | <i>Turbomachines</i> - Koen HILLEWAERT | B1 | Q1 | 26 | 26 | - | 6 |
| MECA0041-2 | <i>Internal combustion engine, Part 1 Fundamental aspects</i> (english language) - Marc NÉLIS - [1d FW, 15h Proj.] | B1 | Q2 | 15 | 15 | [+] | 3 |
| | Corequisite : MECA0002-1 - Thermodynamique appliquée et introduction aux machines thermiques | | | | | | |
| ELEC0055-2 | <i>Element of power Electronics, Part A</i> (english language) - Fabrice FREBEL | B1 | Q1 | 30 | 6 | - | 3 |
| MECA0531-1 | <i>Experimental Evaluation of Components and Processes</i> (english language) - Pierre DEWALLEF, Samuel GENDEBIEN - [12h Labo., 1d FW] | B1 | Q1 | 26 | 14 | [+] | 3 |
| APRI0003-2 | <i>Energetics Integrated Project</i> - Pierre DEWALLEF, Samuel GENDEBIEN, Vincent LEMORT - [5d FW] | B1 | TA | 30 | 80 | [+] | 10 |
| | Corequisite : | | | | | | |

MECA0006-1 - Cooling and low-temperature heating systems
MECA0450-3 - Renewable Energy System Design

Choose courses totalling 25 credits from the elective courses list. (B2 : 25Cr)

[...] One course to be chosen from the courses' programme of other masters of the Faculty of applied sciences or du catalogue UNIC (with the approval of the President of the Jury of the cycle).

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

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|------------|---|----|----|----|----|-----|---|
| MECA0002-1 | <i>Applied Thermodynamics and Introduction to Heat Engines</i> - Vincent LEMORT | B2 | Q1 | 26 | 26 | - | 5 |
| ELEC0053-2 | <i>Electric circuits</i> - Bertrand CORNÉLUSSE | B2 | Q2 | 26 | 26 | - | 5 |
| ELEC0431-2 | <i>Electromagnetic energy conversion</i> (english language) - Christophe GEUZAINÉ - [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

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|------------|---|----|----|----|---|---|---|
| LANG1957-1 | <i>Dutch for Engineers, part 1</i> (dutch language) - Claudine COLIN | B2 | Q1 | 36 | - | - | 3 |
| LANG1958-1 | <i>German for Engineers, Part 1</i> (german language) - Françoise CARL | B2 | 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 | B2 | 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 | B2 | Q2 | 24 | - | - | 2 |

Power production, transport and distribution

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|------------|---|----|----|----|----|-----|---|
| CHIM0664-1 | <i>Electrochemical energy conversion and storage</i> (english language) - <i>theory</i> - Nathalie JOB - <i>lab</i> - Nathalie JOB - [15h Labo.] | B2 | Q1 | 15 | - | - | 3 |
| GENU0018-3 | <i>Introduction to Nuclear Engineering and Power Plant Technologies</i> (english language) - Pierre DEWALLEF Corequisite : MECA0037-1 - Thermal Power Plants and Combined Heat and Power | B2 | Q2 | 26 | 26 | - | 5 |
| ELEN0445-1 | <i>Microgrids</i> (english language) - Bertrand CORNÉLUSSE - [24h Proj., 1d FW] | B2 | Q1 | 18 | 18 | [+] | 5 |
| MECA0041-3 | <i>Internal combustion engine, Part 2 Application to propulsion</i> (english language) - Marc NÉLIS - [10h Proj., 0,5d FW] | B2 | Q2 | 10 | 10 | [+] | 2 |

Rational use of energy

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|------------|---|----|----|----|----|-----|---|
| ARCH3272-2 | <i>Building performance simulation and monitoring, Part 1</i> (english language) - Shady ATTIA | B2 | Q1 | 15 | 15 | - | 3 |
| MECA0034-1 | <i>Energy flexibility in buildings</i> (english language) - Vincent LEMORT | B2 | Q1 | 26 | 26 | - | 5 |
| ELEN0074-1 | <i>Sensors, microsensors and instrumentation</i> (english language) - Philippe VANDERBEMDEN - [20h Labo.] | B2 | Q2 | 30 | - | [+] | 5 |
| MECA0501-1 | <i>Thermal Energy Management in vehicles</i> (english language) - Vincent LEMORT | B2 | Q1 | 26 | 26 | - | 5 |

Advanced modeling and simulation

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|------------|---|----|----|----|----|---|---|
| ELEC0041-1 | <i>Modelling and design of electromagnetic systems</i> (english language) | B2 | Q2 | 26 | 26 | - | 5 |
|------------|---|----|----|----|----|---|---|

- Christophe GEUZAINÉ

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|-------------------------------|--|----|----|----|----|-----|---|
| MECA0032-1 | <i>Flow in turbomachines</i> (english language) - Koen HILLEWAERT - [60h Proj.] | B2 | Q1 | 26 | 26 | [+] | 5 |
| MATH0461-2 | <i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX - [25h Proj.] | B2 | Q1 | 30 | 20 | [+] | 5 |
| MECA0027-1 | <i>Structural and multidisciplinary optimization</i> (english language) - Pierre DUYSINX, Patricia TOSSINGS - Suppl : Michaël BRUYNEEL - [18h Proj.] | B2 | Q1 | 30 | 12 | [+] | 5 |
| Other optional courses | | | | | | | |
| ELEC0018-1 | <i>Energy market and regulation</i> (english language) - Damien ERNST | B2 | Q1 | 39 | 13 | - | 5 |
| MECA0462-2 | <i>Materials selection</i> (english language) - Anne MERTENS, Davide RUFFONI - [30h Proj., 1d FW] | B2 | Q1 | 26 | 26 | [+] | 5 |
| MECA0527-1 | <i>Electric, hybrid and fuel cell vehicles</i> (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)

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|------------|--|----|----|----|----|-----|---|
| MECA0445-2 | <i>Heat transfer</i> (english language) - Pierre DEWALLEF, Vincent TERRAPON - [4h Labo., 9h Proj.] | B0 | Q2 | 28 | 24 | [+] | 5 |
| MECA0012-6 | <i>Solid mechanics</i> - Laurent DUCHENE - [15h Proj.] | B0 | Q2 | 26 | 26 | [+] | 5 |
| ELEC0052-2 | <i>Electric measurements: foundations and applications</i> - Philippe VANDERBEMDEN - [24h Labo.] | B0 | Q1 | 30 | 6 | [+] | 5 |
| MECA0025-3 | <i>Fluid Mechanics</i> - Eric DELHEZ - [30h Proj.] | B0 | Q2 | 26 | 26 | [+] | 5 |
| MECA0036-2 | <i>Finite Element Method</i> (english language) - JeanPhilippe PONTHOT - [40h Proj.] | B0 | Q2 | 26 | 26 | [+] | 5 |
| MECA0155-2 | <i>Dynamics of mechanical systems</i> - Loïc SALLES - [20h Proj.] | B0 | Q1 | 26 | 26 | [+] | 5 |
| PHYS0904-4 | <i>Physics of materials</i> - Luc COURARD, Anne MERTENS - [1d FW] | B0 | Q2 | 26 | 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> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.] | B0 | Q1 | 27 | 25 | [+] | 5 |
| LANG0039-2 | <i>English 2, English for Engineering</i> (english language) - Véronique DOPPAGNE, Pascale DRIANNE, Philippe JEUKENNE, Martin POLSON, David VANMANSHOVEN - [20h Proj.] | B0 | TA | - | 30 | [+] | 3 |

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