

Master of science in Electromechanical Engineering

Focus Operations engineering and management

Bloc 1 | M-IREMI | MA-IREM

Common courses - Block 1

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| ELEC-H406 | Electrical drives Johan GYSELINCK (Coordinator) and Omar HEGAZY ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 second term 🗨 English |
| MATH-H407 | Control system design Emanuele GARONE (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, practical work: 24h] 📅 first term 🗨 English |
| MECA-H402 | Turbomachinery Patrick HENDRICK (Coordinator) ⌚ 3 credits [lecture: 24h, tutorial classes: 12h] 📅 second term 🗨 English |
| MECA-H409 | Design methodology Alain DELCHAMBRE (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 24h, personal assignments: 12h] 📅 first term 🗨 English |
| MECA-H419 | Data-Driven Engineering Alessandro PARENTE (Coordinator), Axel Coussement, Emanuele GARONE, Omar HEGAZY, Alassane Ballé NDIAYE and Mehrdad TERATANI ⌚ 4 credits [lecture: 36h, tutorial classes: 12h] 📅 second term 🗨 English |

Partially common courses - Block 1

Courses to choose

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| CNST-H421 | Structural analysis and finite elements Peter BERKE (Coordinator) and Lincy Pyl ⌚ 5 credits [lecture: 36h, tutorial classes: 24h] 📅 first term 🗨 English |
| MECA-H411 | Mechanical Vibrations Arnaud DERAEMAEKER (Coordinator) and Wout Weijtjens ⌚ 5 credits [lecture: 36h, tutorial classes: 24h] 📅 first term 🗨 English |
| MECA-H420 | Piston Engines Axel Coussement (Coordinator) ⌚ 3 credits [lecture: 26h, practical work: 8h] 📅 first term 🗨 English |

Optional courses

One course chosen from the following

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| PROJ-H405 (optional) | Project in Electromechanical Engineering Emanuele GARONE (Coordinator), Aurélie Bellemans, Svend Bram, Alain DELCHAMBRE, Johan GYSELINCK, Patrick HENDRICK, Pierre HENNEAUX, Joeri VAN MIERLO and Bram VANDERBORGHT ⌚ 5 credits [personal assignments: 150h] 📅 first and second terms 🗨 English |
| PROJ-H417 (optional) | Projet coopération au développement / Development cooperation project Antoine NONCLERCQ (Coordinator) ⌚ 5 credits [project: 150h] 📅 first and second terms 🗨 French Only on selection : see the Development Unit of the Polytechnic School of Brussels (http://polytech.ulb.be/en/international/development-cooperation) |
| PROJ-H418 (optional) | Hands-on learning: project manager (chef de projet) Peter BERKE (Coordinator) ⌚ 5 credits [project: 150h] 📅 first and second terms 🗨 French |
| PROJ-H420 (optional) | Eco-marathon project Patrick HENDRICK (Coordinator) and Johan GYSELINCK ⌚ 5 credits [project: 150h] 📅 first and second terms 🗨 English |

Specific courses - Block 1

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| GEST-H501 | Logistics Engineering and Management Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h] 📅 first term 🗨 English |
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GEST-H502 [Supply Chain Performance Analytics](#) | Alassane Ballé NDIAYE (Coordinator)
⌚ 5 credits [lecture: 12h, tutorial classes: 36h, personal assignments: 12h] 📅 second term 🗨 English

INFO-H420 [Management of Data Science and Business Workflows](#) | Dimitrios SACHARIDIS (Coordinator)
⌚ 5 credits [lecture: 24h, tutorial classes: 36h] 📅 first term 🗨 English

STAT-S406 [Data management and business analytics](#) | Martine GEORGE (Coordinator)
⌚ 5 credits [lecture: 36h, tutorial classes: 24h] 📅 second term 🗨 English



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Bloc 2 | M-IREMI | MA-IREM

Partially common courses - Block 2

Courses to choose

- MATH-H503 **Model-Based and Data-Driven Fault Detection and Isolation** | Michel KINNAERT (Coordinator)
⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 second term 🗨 English
- MECA-H406 **Composite structures** | Patrick HENDRICK (Coordinator)
⌚ 3 credits [lecture: 18h, tutorial classes: 18h] 📅 second term 🗨 English
- PHYS-H524 **Reliability and risk analysis of industrial installations** | Pierre-Etienne LABEAU (Coordinator)
⌚ 4 credits [lecture: 24h, tutorial classes: 18h, practical work: 6h] 📅 first term 🗨 English

Master Thesis

- MEMO-H502 **Master thesis in Electromechanical Engineering** | Patrick HENDRICK (Coordinator), Aurélie Bellemans, Svend Bram, Alain DELCHAMBRE, Emanuele GARONE, Johan GYSELINCK, Pierre HENNEAUX, Joeri VAN MIERLO and Bram VANDERBORGHT
⌚ 24 credits [mfe/tfe: 600h] 📅 academic year 🗨 English

Specific courses - Block 2

10 ECTS

A total of ten credits chosen from the following

- GEST-S421 (optional) **Entrepreneurial ecosystems** | Judith BEHRENS (Coordinator)
⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English
- GEST-S564 (optional) **Project management** | FREDERIC HOFFMANN (Coordinator)
⌚ 5 credits [seminars: 24h] 📅 second term 🗨 English

Elective courses - Block 2

Elective courses - Block 2

A total of 15 credits chosen from the following

- GEST-H506 (optional) **Energy policy and management** | Pierre HENNEAUX (Coordinator), Adel EL Gammal and Benjamin GENET
⌚ 5 credits [lecture: 42h, practical work: 18h] 📅 first and second terms 🗨 English
- GEST-S440 (optional) **Applied marketing analytics** | Sandra ROTHENBERGER (Coordinator) and Philippe MAUCHARD
⌚ 5 credits [lecture: 48h] 📅 second term 🗨 English
- GEST-S448 (optional) **Organizational behaviour and leadership** | Claudia TOMA (Coordinator)
⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 first term 🗨 English

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|-------------------------|---|
| GEST-S471 (optional) | Management and sustainable development : constraints and opportunities Eric MONAMI (Coordinator) ⌚ 5 credits [lecture: 36h, seminars: 36h] 📅 second term 🗨 English |
| INFO-F422 (optional) | Statistical foundations of machine learning Gianluca BONTEMPI (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, project: 60h] 📅 second term 🗨 English |
| MATH-H510 (optional) | Risk-based methodologies for energy systems Pierre-Etienne LABEAU (Coordinator) and Pierre HENNEAUX ⌚ 4 credits [lecture: 24h, personal assignments: 24h] 📅 second term 🗨 English |
| STAG-H501 (optional) | Internship (60 days) Frédéric ROBERT (Coordinator) ⌚ 10 credits [personal assignments: 300h] 📅 first term 🗨 English |

Free elective courses

Students have also the opportunity to choose courses among the courses of the 'transversal modules' of the School.

English : LANG-H500

Engineering and society : PROJ-H421 - GEST-H509 - BIME-G5505 - PHYS-F517

Sustainability : GEST-S492 - ENVI-F405 - CHIM-H504 - ENVI-F452 - ENVI-F454 - ELEC-Y514

Finance, accounting, management, marketing, logistics and quality : GEST-S101 - GEST-S318 - GEST-S421 - GEST-Y501 GEST-H501 - GEST-H502

Participation to a summer school : EDUC-H601

Free elective courses

Up to six credits chosen from the following

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| BIME-G5505 (optional) | Interfaculty and interdisciplinary program in Healthcare Innovation Hilde STEVENS (Coordinator) ⌚ 5 credits [lecture: 40h, tutorial classes: 20h] 📅 second term 🗨 English |
| CHIM-H504 (optional) | Engineering aspects of circular economy Prakash VENKATESAN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 first term 🗨 English |
| DROI-C5174 (optional) | Approche interdisciplinaire du droit de la propriété intellectuelle/Interdisciplinary Approach to In Julien CABAY (Coordinator) ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English/French |
| EDUC-H601 (optional) | Summer School Johan GYSELINCK (Coordinator) ⌚ 5 credits [personal assignments: 5h] 📅 academic year 🗨 English |
| ELEC-Y514 (optional) | Sustainability : an interdisciplinary Approach Cathy MACHARIS (Coordinator) and Waldo Galle ⌚ 6 credits [lecture: 36h, practical work: 24h, personal assignments: 100h] 📅 academic year 🗨 English |
| ENVI-F405 (optional) | Climat: sciences et politiques Frank PATTYN (Coordinator) and Louise Knops ⌚ 5 credits [lecture: 40h] 📅 second term 🗨 French |
| ENVI-F452 (optional) | Environmental impact analysis and management Wouter ACHTEN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 12h, project: 24h] 📅 first term 🗨 English/French |
| ENVI-F454 (optional) | Energie: Société et environnement Michel HUART (Coordinator) and Nadine MATTIELLI ⌚ 5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] 📅 first term 🗨 French |
| GEST-H501 (optional) | Logistics Engineering and Management Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h] 📅 first term 🗨 English |
| GEST-H502 (optional) | Supply Chain Performance Analytics Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h, personal assignments: 12h] 📅 second term 🗨 English |
| GEST-H509 (optional) | Ethique de l'ingénieur ⌚ 3 credits [lecture: 12h, tutorial classes: 12h, practical work: 12h] 📅 second term 🗨 French |
| GEST-S101 (optional) | Comptabilité financière Gilles GEVERS (Coordinator) and Laurent GHEERAERT ⌚ 5 credits [lecture: 36h, tutorial classes: 8h] 📅 second term 🗨 French |

GEST-S318
(optional)

[Introduction to theoretical finance](#) | Laurent GHEERAERT (Coordinator)

⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English

GEST-S421
(optional)

[Entrepreneurial ecosystems](#) | Judith BEHRENS (Coordinator)

⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English

GEST-S492
(optional)

[Energy policy, sustainability & management](#) | Adel EL Gammal (Coordinator), Julien BLONDEAU and Michel HUART

⌚ 5 credits [lecture: 36h, seminars: 24h] 📅 first term 🗨 English

LANG-H500
(optional)

[English for professional purposes](#) | Alexander CORNFORD (Coordinator)

⌚ 5 credits [tutorial classes: 48h, personal assignments: 12h] 📅 first and second terms 🗨 English

PROJ-H421
(optional)

[Projet polydaire: expériences didactiques innovantes pour le secondaire](#) | Simon-Pierre GORZA (Coordinator)

⌚ 5 credits [project: 150h] 📅 academic year 🗨 French