

Master of science in Electromechanical Engineering

Focus Operations engineering and management

Bloc 1 | M-IREMI | MA-IREM

Common courses - Block 1

- 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)
 5 credits [lecture: 36h, tutorial classes: 20h, practical work: 4h] | 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

- 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 DERAEMAERKER (Coordinator) and Wout Weijtjens
 5 credits [lecture: 36h, tutorial classes: 24h] | first term | English
- MECA-Y401** | **Piston engines** | Axel Coussement (Coordinator)
 3 credits [lecture: 26h, practical work: 8h] | first term | English

Optional courses

One course chosen from the following

- 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** | 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

- GEST-H501** | **Logistics Engineering and Management** | Alassane Ballé NDIAYE (Coordinator)
 5 credits [lecture: 12h, tutorial classes: 36h] | first term | English

- 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) and Julie Terache
 5 credits [lecture: 24h, tutorial classes: 24h] first term English

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: 30h, tutorial classes: 18h] 📅 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

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] 📅 second 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] 📅 academic year 🗨 English
ENVI-F405 (optional)	Climat: sciences et politiques Frank PATTYN (Coordinator) ⌚ 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: 30h, practical work: 12h, project: 24h] 📅 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)	📅 unknown term
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
- GEST-Y501
(optional) **Business Management and Entrepreneurship** | Marc GOLDCHSTEIN (Coordinator)
⌚ 3 credits [lecture: 33h] 📅 first term 🗨 English
- LANG-H500
(optional) **English for professional purposes** | Alexander CORNFORD (Coordinator) and Matthew LANGSLEY
⌚ 5 credits [tutorial classes: 48h, personal assignments: 12h] 📅 first and second terms 🗨 English
- PHYS-F517
(optional) **How To Make (almost) Any Experiment Using Digital Fabrication** | Denis TERWAGNE (Coordinator)
⌚ 5 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 French
- PROJ-H421
(optional) **Projet polydaire: expériences didactiques innovantes pour le secondaire** | Simon-Pierre GORZA (Coordinator)
⌚ 5 credits [project: 150h] 📅 academic year 🗨 French