At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In English
Dissertation/Graduation Project: YES - Internship: optional
Activities in English: YES - Activities in other languages: YES
Activities on other sites: optional
Main study domain: Sciences de l'ingénieur et technologie
Organized by: Louvain School of Engineering (EPL)
Programme acronym: ELME2M - Francophone Certification Framework: 7

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</tbody>
</table>
Introduction

The Master’s degree programme in electro-mechanical engineering draws equally from two fields (mechanics and electricity) and prioritises basic knowledge with the goal of deepening or reorienting students’ knowledge mid-career. By the end of the programme, students will be able to keep up with technical developments and adapt themselves to the needs of the job market.

Your profile

You

• Have solid knowledge of electricity and mechanics;
• Want to improve your understanding of current technological and scientific issues;
• Want to design, model, realise and validate experimental devices and systems;
• Want to specialise in mechatronics or in energy and foresee a career in robotics and “flexible production”, energy transformation and management, vehicles and transportation systems and/or aeronautics.

Your programme

This Master’s degree offers:

• General knowledge of electro-mechanics based on research;
• The mastery of mathematical and physical methods used in electricity and mechanics;
• An interdisciplinary approach to problem solving with particular emphasis placed on interface problems;
• Pedagogy centred on project-based learning;
• The possibility of testing your knowledge in the job market thanks to internships in the industrial sector

Majors: Mechatronics; Energy
Learning outcomes

Integrating the fields of mechanics and electricity is one of the major challenges of the civil engineering student in electro-mechanics. The Master’s degree in Electro-mechanical engineering from UCL favours multidisciplinary training and the ability to solve interface problems raised by the integration of several fields. It integrates the fields of electricity and mechanics into a coherent whole and prioritises basic knowledge with the aim of deepening or reorienting students’ knowledge mid-career.

Students will acquire the knowledge and skills necessary to become:

• Specialists in mechatronics (electronics, mechanical production, automation and robotics) or specialists in energy (smart grids/energy networks, thermodynamics and energy).
• Individuals with field experience capable of putting into practice their knowledge of research and technology.
• Managers who can manage team projects

The Master’s degree programme in electro-mechanical engineering prepares its students to be aware of technical progress and adapt to the needs of the job market and changes in business.

Polytechnic and multidisciplinary, the training provided by the Louvain School of Engineering privileges the acquisition of knowledge that combines theory and practice and that is open to analysis, design, manufacturing, production, research and development and innovation all the while paying attention to ethics and sustainable development.

On successful completion of this programme, each student is able to:

1. Demonstrate mastery of a solid body of knowledge in basic science and engineering science allowing the student to learn and solve problems pertaining to electro-mechanics. (Axis 1)
   1.1. Identify and use concepts, laws and appropriate reasoning from a variety of fields in mechanics and electricity to solve a given problem:
   • Electricity (in the broad sense)
   • Electrical energy (transport, quality, management)
   • Electro-technics (conversion, controls, activation)
   • Electronics (digital electronics, instrumentation, sensors)
   • Automation
   • Computer sciences (real time)
   • Mechanics (modeling, design)
   • Thermodynamics and thermics
   • Fluid dynamics and transfers
   • Robotics and automation.
   • Energetic systems (production, distribution, heat and energetic efficiency)
   1.2. Identify and use modelling and calculation tools to solve problems associated with the aforementioned fields.
   1.3. Verify problem solving results especially with regard to orders of magnitude and/or units (in which the results are expressed).

2. Organize and carry out an applied engineering process to develop a product and/or service responding to a particular need or problem in the field of electro-mechanics. (Axis 2)
   2.1. Analyse a problem, take stock of features and constraints, and formulate specifications in a field where the technical and economic limits are taken into account
   2.2. Model a problem and design one or more technical solutions (drawing on the fields of mechanics, electrics, electronics, electro-technics or information technology) and respond to problem specifications.
   2.3. Evaluate and classify solutions with regards to all the specification criteria: efficiency, feasibility, ergonomic quality and environmental security (for example: too expensive, too complex, too dangerous, too difficult to manipulate).
   2.4. Test a solution using a mock up, a prototype or a numerical model.
   2.5. Formulate recommendations to improve a technical solution.

3. Organise and carry out a research project to learn about a physical phenomenon or a new problem relating to the field of electro-mechanics. (Axis 3)
   3.1. Document and summarise the existing body of knowledge in the field of mechanics and electricity
   3.2. Suggest an experimental model or device (for example in the area of thermal regulation) by first constructing a mathematical model, then by using laboratories to create a device simulates system behaviour and tests relevant hypotheses.
   3.3. Synthesize conclusions in a report that shows the key parameters and their influence on the behaviour of the phenomenon under study (choice of forms and materials, physio-chemical environment, conditions for use).

4. Contribute, through teamwork, to a multidisciplinary project and carry out the project while taking into account its objectives, resources, and constraints. (Axis 4)
   4.1. Frame and explain the project’s objectives taking into account the issues, constraints and domain interfaces that characterise the project’s environment.
4.2. Collaborate with peers on a multidisciplinary topic (mechanics and electricity) to create a work schedule (and resolve any resulting conflicts).
4.3. Make team decisions to successfully complete the project whether they be about technical solutions of the division of labour.

5. Communicate effectively (speaking or writing in French or a foreign language) with the goal of carrying out assigned projects. (Axis 5)

5.1. Identify the clients’ needs: question, listen and ensure the understanding of all the dimensions of the request and not just the technical aspects.
5.2. Present your arguments and convince your interlocutors (technicians, colleagues, clients, superiors) by adopting their language.
5.3. Communicate through graphics and diagrams: interpret a diagram, present work results, structure information.
5.4. Read and analyse different technical documents related to the profession (standards, drawings, specifications).
5.5. Draft written documents that take into account contextual requirements and social conventions.
5.6. Use modern communication techniques to give convincing oral presentations.

6. Display rigour, openness, and critical thinking: validate the socio-technical relevance of a hypothesis or a solution, all the while drawing upon available technological and scientific innovations. (Axis 6)

6.1. Apply standards and assure the robustness of a solution in the fields of mechanics and electricity.
6.2. Put solutions into perspective by including non-technical concerns (for example, in the area of energy and climate, take environmental and social factors into consideration).
6.3. Demonstrate critical thinking vis-à-vis technical solutions or methodological approach regarding the involved actors.
6.4. Evaluate one’s own work.

Programme structure

The student’s programme includes:

- A common core curriculum (54 credits)
- A final specialisation (30 credits)
- One of more of the major courses or elective courses listed below.

The graduation project is normally completed in the second year. However, students may, depending on the nature of their project, choose to take their classes in the first or second year so long as their course prerequisites allow it. This is particularly the case for students completing part of their program abroad.

If during the student’s previous studies, he or she has already taken a course that is part of the programme (either required or elective) or they have participated in an academic activity that is approved by the programme commission, the student may count this activity toward their graduation requirements (but only if they respect programme rules). The student will also verify that he/she has obtained the minimum number of credits requested for the approval of their diploma as well as for the approval of their major (in order to include their academic distinctions in the diploma supplement).

These types of programmes will be submitted for approval by the relevant Master's degree programme commission.

ELME2M Programme

Detailed programme by subject

CORE COURSES

- Mandatory
- Optional
- Not offered in 2022-2023
- Not offered in 2022-2023 but offered the following year
- Offered in 2022-2023 but not the following year
- Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

### Graduation project/End of studies project

Graduation project can be written and presented in French or English, in consultation with the supervisor. It may be accessible to exchange students by prior agreement between the supervisors and/or the two universities.

- **LELME2990**
  - **Course Name:** Graduation project/End of studies project
  - **Credits:** 25 Credits
  - **Language:** French-friendly

### Professional integration work

Les modules du cours LEPL2020 sont organisés sur les deux blocs annuels du master. Il est fortement recommandé à l'étudiant.e de les suivre dès le bloc annuel 1, mais il.elle ne pourra inscrire le cours que dans son programme de bloc annuel 2.

- **LEPL2020**
  - **Course Name:** Professional integration work
  - **Credits:** 30 Credits
  - **Language:** French-friendly

### Linear Control

Linear Control

- **LINMA1510**
  - **Course Name:** Linear Control
  - **Credits:** 5 Credits
  - **Language:** French-friendly

### Electricity and electronics courses

- **LELEC2660**
  - **Course Name:** Power electronics
  - **Credits:** 5 Credits
  - **Language:** French-friendly

- **LELEC2811**
  - **Course Name:** Instrumentation and sensors
  - **Credits:** 5 Credits
  - **Language:** French-friendly

- **LELME2313**
  - **Course Name:** Dynamic modelling and control of electromechanical converters
  - **Credits:** 5 Credits
  - **Language:** French-friendly

### Project

Les étudiants choisissent le projet qui correspond à leur finalité:

- **LELME2003**
  - **Course Name:** Project in energy
  - **Credits:** 5 Credits
  - **Language:** French-friendly

- **LELME2002**
  - **Course Name:** Project in mechatronics
  - **Credits:** 10 Credits
  - **Language:** French-friendly
**LIST OF FOCUSES**

> Professional Focus : Mecatronics  [ en-prog-2022-elme2m-lelme220s ]
> Professional Focus : Energy  [ en-prog-2022-elme2m-lelme221s ]

**PROFESSIONAL FOCUS : MECATRONICS [30.0]**

- ☑ Mandatory
- ☑ Optional
- △ Not offered in 2022-2023
- ☒ Not offered in 2022-2023 but offered the following year
- ☐ Offered in 2022-2023 but not the following year
- △ ☒ Not offered in 2022-2023 or the following year
- □ Activity with requisites
- ☑ Open to incoming exchange students
- ☒ Not open to incoming exchange students
- Option Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

| Year | 1 | 2 |

- **Content:**

  Pour LINFO1361, une alternative peut être proposée pour les non-speaking French students (as Machine Learning course).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Teaching Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>LELME2311</td>
<td>Physics of Electromechanical Converters</td>
<td>Bruno Dehez</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LELEC2531</td>
<td>Electronic digital systems</td>
<td>Jean-Didier Legat</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LMECA2755</td>
<td>Industrial automation</td>
<td>Bruno Dehez, Paul Fiset, Renaud Ronse</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LMECA2801</td>
<td>Machine design</td>
<td>Benoit Raucent, Thomas Servais, Renaud Ronse</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LINFO1361</td>
<td>Artificial intelligence</td>
<td>Yves Deville</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LELME2732</td>
<td>Robot modelling and control</td>
<td>Renaud Ronse</td>
<td>5</td>
<td>xxx</td>
</tr>
</tbody>
</table>

**PROFESSIONAL FOCUS : ENERGY [30.0]**

- ☑ Mandatory
- ☑ Optional
- △ Not offered in 2022-2023
- ☒ Not offered in 2022-2023 but offered the following year
- ☐ Offered in 2022-2023 but not the following year
- △ ☒ Not offered in 2022-2023 or the following year
- □ Activity with requisites
- ☑ Open to incoming exchange students
- ☒ Not open to incoming exchange students
- Option Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

| Year | 1 | 2 |

- **Content:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Teaching Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>LELME2150</td>
<td>Thermal cycles</td>
<td>Yann Bartosiewicz</td>
<td>5</td>
<td>xxx</td>
</tr>
<tr>
<td>LMECA2854</td>
<td>Heat and mass transfer II</td>
<td>Yann Bartosiewicz, Matthieu Duponchelet</td>
<td>5</td>
<td>xxx</td>
</tr>
</tbody>
</table>
Options du master ingénieur civil électromécanicien

- Major in circuits and electronic systems  [en-prog-2022-elme2m-lelme227o]
- Major in Systems and control engineering  [en-prog-2022-elme2m-lelme230o]
- Major in dynamics, robotics and biomechanics  [en-prog-2022-elme2m-lelme223o]
- Major in nuclear engineering  [en-prog-2022-elme2m-lelme237o]
- Major in aeronautics  [en-prog-2022-elme2m-lelme240o]
- Major in design, manufacturing and mechanics of materials  [en-prog-2022-elme2m-lelme241o]
- Cours au choix disciplinaires  [en-prog-2022-elme2m-lelme238o]

Options et cours au choix en connaissances socio-économiques

- Business risks and opportunities  [en-prog-2022-elme2m-lelme232o]
- Major in small and medium sized business creation  [en-prog-2022-elme2m-lelme233o]
- Cours au choix en connaissances socio-économiques  [en-prog-2022-elme2m-lelme239o]

Others elective courses

Others elective courses  [en-prog-2022-elme2m-lelme231o]
MAJOR IN CIRCuits AND ELECTRONIC SYSTEMS

The goal of this major (which it shares with Master’s degree programs in electricity and electro-mechanics) is to introduce students to system design techniques, computer aided simulation, manufacturing and experimental characterisation of components and circuits (both analogue and numerical) as well as mixed systems. Emphasis is placed on practical applications and the completion of projects.

- Optional
- Mandatory

The student may select 15 to 30 credits from the following courses:

**From 15 to 30 credit(s)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructors</th>
<th>Credits</th>
<th>Language(s)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LELEC2532</td>
<td>Electronic analog systems</td>
<td>David Bol, Denis Flandre (coord.)</td>
<td>[q2] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2541</td>
<td>Advanced Transistors</td>
<td>Denis Flandre, Benoît Hackens, Jean-Pierre Raskin</td>
<td>[q2] [30h+22.5h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2560</td>
<td>Synthesis of analog integrated circuits</td>
<td>Denis Flandre</td>
<td>[q1] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2570</td>
<td>Synthesis of digital integrated circuits</td>
<td>David Bol</td>
<td>[q2] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2580</td>
<td>Design of RF and microwave communication circuits</td>
<td>Christophe Craeye, Dimitri Lederer</td>
<td>[q2] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2590</td>
<td>Seminars in electronics and communications</td>
<td>Denis Flandre, Isabelle Huynen, Jérôme Louveaux</td>
<td>[q2] [30h] [3 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2620</td>
<td>Modeling and implementation of analog and mixed analog/digital circuits and systems on chip</td>
<td>David Bol</td>
<td>[q2] [30h+22.5h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2650</td>
<td>Power electronics</td>
<td>Marc Bekemans</td>
<td>[q2] [30h+15h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2660</td>
<td>Microwaves</td>
<td>Dimitri Lederer</td>
<td>[q1] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LELEC2700</td>
<td>Secure electronic circuits and systems</td>
<td>François-Xavier Standaert</td>
<td>[q2] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
<tr>
<td>LINFO2315</td>
<td>Design of Embedded and real-time systems</td>
<td>Cristel Peisser</td>
<td>[q2] [30h+30h] [5 Credits]</td>
<td>FR</td>
<td>1 2</td>
</tr>
</tbody>
</table>
MAJOR IN SYSTEMS AND CONTROL ENGINEERING

- Mandatory
- Optional
- Not offered in 2022-2023
- Not offered in 2022-2023 but offered the following year
- Offered in 2022-2023 but not the following year
- Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language (FR, EN, ES, NL, DE, ...)

The student may select:
From 15 to 30 credit(s)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Language</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGBIO2060</td>
<td>Modelling of biological systems</td>
<td>Philippe Lefèvre</td>
<td>5</td>
<td>EN</td>
<td>q1</td>
</tr>
<tr>
<td>LINMA2300</td>
<td>Analysis and control of distributed parameter systems</td>
<td>Pierre-Antoine Abil, Estelle Massart</td>
<td>5</td>
<td>EN</td>
<td>q1</td>
</tr>
<tr>
<td>LINMA2361</td>
<td>Nonlinear dynamical systems</td>
<td>Pierre-Antoine Abil, Estelle Massart</td>
<td>5</td>
<td>EN</td>
<td>q1</td>
</tr>
<tr>
<td>LINMA2671</td>
<td>Advanced control and applications</td>
<td>Julien Hendrickx</td>
<td>5</td>
<td>EN</td>
<td>q1</td>
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<tr>
<td>LINMA2675</td>
<td>System identification</td>
<td>Gianluca Bianchin</td>
<td>5</td>
<td>EN</td>
<td>q2</td>
</tr>
<tr>
<td>LINMA2510</td>
<td>Mathematical ecology</td>
<td>Eric Deleersnijder, Emmanuela Hanert, Thierry Van Efteleer</td>
<td>5</td>
<td>EN</td>
<td>q2</td>
</tr>
</tbody>
</table>

MAJOR IN DYNAMICS, ROBOTICS AND BIOMECHANICS

The goal of this major (which it shares with Master’s degree programs in electricity and electro-mechanics) is to give students a complete education in this field. All phases of the mechanical manufacturing process are studied from the design stage to putting manufacturing techniques into place to production planning and the organisation of workshops. In addition, students will learn about important technological techniques (machine parts) as well as solid mechanics (elasticity and plasticity) in order to master the processing, behaviour and use of common materials. Finally, attention is paid to methods used in the fields of automation and robotics.

- Mandatory
- Optional
- Not offered in 2022-2023
- Not offered in 2022-2023 but offered the following year
- Offered in 2022-2023 but not the following year
- Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language (FR, EN, ES, NL, DE, ...)

The class LELME 2732 may not be taken as part of this major by ELME (mechatronics) students. Students majoring in this field may select:
From 20 to 30 credit(s)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Language</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>LGBIO2040</td>
<td>Biomechanics</td>
<td>Greet Kerckhofs</td>
<td>5</td>
<td>EN</td>
<td>q2</td>
</tr>
<tr>
<td>LGCV2042</td>
<td>Dynamics of structures</td>
<td>João Saraiva Esteves, Pacheco De Almeida</td>
<td>4</td>
<td>EN</td>
<td>q1</td>
</tr>
<tr>
<td>Code</td>
<td>Course</td>
<td>Instructor(s)</td>
<td>Credits</td>
<td>Language(s)</td>
<td></td>
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<td>------------------------</td>
<td></td>
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<tr>
<td>LMECA2170</td>
<td>Numerical Geometry</td>
<td>Vincent Legat Jean-François Remacle</td>
<td>5</td>
<td>EN</td>
<td></td>
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<tr>
<td>LMECA2215</td>
<td>Vehicle System Dynamics</td>
<td>Paul Fisette</td>
<td>5</td>
<td>EN</td>
<td></td>
</tr>
<tr>
<td>LMECA2355</td>
<td>Mechanical design in biomedical engineering</td>
<td>Greet Kerckhofs Benoit Raucent Ann Vankrunkelsven (compensates Benoit Raucent)</td>
<td>5</td>
<td>EN</td>
<td></td>
</tr>
<tr>
<td>LELME2732</td>
<td>Robot modelling and control</td>
<td>Renaud Ronsse</td>
<td>5</td>
<td>EN</td>
<td></td>
</tr>
<tr>
<td>LMECA2802</td>
<td>Multibody system Dynamics</td>
<td>Paul Fisette</td>
<td>5</td>
<td>EN</td>
<td></td>
</tr>
<tr>
<td>LINMA2875</td>
<td>System Identification</td>
<td>Gianluca Bianchin</td>
<td>5</td>
<td>ENG-FR-FR</td>
<td></td>
</tr>
<tr>
<td>LMECA2335</td>
<td>Biorobotics</td>
<td>Renaud Ronsse</td>
<td>5</td>
<td>EN</td>
<td></td>
</tr>
</tbody>
</table>
**ELME2M: Master [120] in Electro-mechanical Engineering**

### MAJOR IN NUCLEAR ENGINEERING

As with the Master’s in civil electromechanical engineering with a specialization in energy as well as the Master’s in civil and mechanical engineering, the goal of this major is to offer an in-depth education in the principal aspects of nuclear engineering. Entry into this programme, which is primarily overseen by the Mol Centre of Nuclear Energy, is contingent on an evaluation of candidates’ skills based on the rules used for ERASMUS-SOCRATES exchange students. Further information about this major may be found on Mol’s website SCK-CEN.

- Mandatory
- Optional
- △ Not offered in 2022-2023
- ⊗ Not offered in 2022-2023 but offered the following year
- ⚫ Offered in 2022-2023 but not the following year
- ▲ ⊗ Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

**Commune aux masters ingénieur civil électromécanicien, finalité spécialisée énergie, et ingénieur civil mécanicien, cette option a pour objectif d’offrir une formation approfondie dans les principaux aspects du génie nucléaire. L’accès à cette option qui est organisée pour sa plus grand partie au Centre d’énergie nucléaire de Mol est conditionnée à une évaluation des compétences des candidats suivant les règles utilisées pour les candidatures aux échanges ERASMUS-SOCRATES. Plus de détails sur cette option sont disponibles sur le site du SCK-CEN de Mol.**

**From 16 to 21 credit(s)**

#### Content:

- **Compulsory courses for the nuclear engineering major (10 credits)**
  - **LMECA2600** Introduction to nuclear engineering and reactor technology
    - Hamid Aït Abderrahim
    - EN
    - [q1] [30h+30h] [5 Credits]
  - **LMECA2648** Nuclear thermal-hydraulics (Centre d'étude nucléaire-Mol)
    - Yann Bartosiewicz
    - EN
    - [q1] [40h+7.5h] [5 Credits]

- **Elective courses for the nuclear engineering major**
  - **LBEN2002** Introduction to Nuclear Physics & Measurements (Centre d'étude nucléaire-Mol)
    - [q1] [3 Credits]
  - **LBEN2003** Safety of Nuclear Powerplants (Centre d'étude nucléaire-Mol)
    - [q2] [5 Credits]
  - **LBEN2011** Radiation protection (Centre d’étude nucléaire-Mol)
    - [q1] [3 Credits]
MAJOR IN AERONAUTICS

Ouverte aux étudiant·es ingénieur·es civil·es mécaniciens et électromécaniciens, cette option reprend des cours sur l'application de la mécanique à l’aéronautique : structures aéronautiques, vibrations, aérodynamique, dynamique du vol. Cet apprentissage se fait au travers de cours approfondis de mécanique des fluides et des solides, avec une attention particulière portée aux méthodes numériques.

- Mandatory
- Optional
- Not offered in 2022-2023
- Not offered in 2022-2023 but offered the following year
- Offered in 2022-2023 but not the following year
- Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language [FR, EN, ES, NL, DE, ...]

Click on the course title to see detailed informations (objectives, methods, evaluation...)

From 20 to 30 credit(s)

**Content:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Teachers</th>
<th>Credits</th>
<th>Teaching language</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2041</td>
<td>Numerical analysis of civil engineering structures</td>
<td>Hadrien Rattez, João Saraiva Esteves, Pacheco De Almeida</td>
<td>4</td>
<td>French-friendly</td>
</tr>
<tr>
<td>LMECA2195</td>
<td>Gasdynamics and reacting flows</td>
<td>Miltiadis Papalexandris</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2300</td>
<td>Advanced Numerical Methods</td>
<td>Philippe Chatelain, Christophe Craeye (coord.), Vincent Legat, Jean-François Remacle</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2323</td>
<td>Aerodynamics of external flows</td>
<td>Philippe Chatelain, Grégoire Winckelmans</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2550</td>
<td>Aircraft propulsion systems.</td>
<td>Philippe Chatelain</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2520</td>
<td>Calculation of planar structures</td>
<td>Issam Doghri</td>
<td>5</td>
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</tr>
<tr>
<td>LMECA2660</td>
<td>Numerical methods in fluid mechanics</td>
<td>Grégoire Winckelmans</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2830</td>
<td>Aerospace dynamics.</td>
<td>Philippe Chatelain, Pierre Schroeyen (compensates Philippe Chatelain)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>LMECA2322</td>
<td>Fluid mechanics II</td>
<td>Philippe Chatelain, Eric Deleersnijder, Grégoire Winckelmans</td>
<td>5</td>
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</table>
# MAJOR IN DESIGN, MANUFACTURING AND MECHANICS OF MATERIALS

- **Mandatory**
- **Optional**
- △ Not offered in 2022-2023
- ⊗ Not offered in 2022-2023 but offered the following year
- ⊙ Offered in 2022-2023 but not the following year
- △ ⊗ Not offered in 2022-2023 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

If the course LMECA1451 has not been taken during the bachelor, you must add it to your programme.

From 20 to 30 credits

## Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Lecture</th>
<th>Exercise</th>
<th>Credits</th>
<th>Teaching Language</th>
<th>Open to Exchange Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMAPR2483</td>
<td>Durability of materials</td>
<td>[q2]</td>
<td>[30h+22.5h]</td>
<td>5 Credits</td>
<td>FR, EN</td>
<td>X x</td>
</tr>
<tr>
<td>LMECA2453</td>
<td>Advanced manufacturing technologies</td>
<td>[q1]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
<td></td>
</tr>
<tr>
<td>LMECA2520</td>
<td>Calculation of planar structures</td>
<td>[q2]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
<td></td>
</tr>
<tr>
<td>LMECA2640</td>
<td>Mechanics of composite materials</td>
<td>[q2]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
<td></td>
</tr>
<tr>
<td>LMECA2860</td>
<td>Welding Science and Technology</td>
<td>[q1]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
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<tr>
<td>LMECA2711</td>
<td>Quality management and control.</td>
<td>[q2]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
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<tr>
<td>LMAPR2020</td>
<td>Materials Selection</td>
<td>[q2]</td>
<td>[30h+22.5h]</td>
<td>5 Credits</td>
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<tr>
<td>LMAPR2018</td>
<td>Rheology</td>
<td>[q2]</td>
<td>[30h+30h]</td>
<td>5 Credits</td>
<td>X x</td>
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</tbody>
</table>
### COURS AU CHOIX DISCIPLINAIRES

- **Mandatory**
- **Optional**
- **△** Not offered in 2022-2023 but offered the following year
- **★** Not offered in 2022-2023 or the following year
- **Activity with requisites.**
- **Open to incoming exchange students**
- **Not open to incoming exchange students**
- **Teaching language (FR, EN, ES, NL, DE, ...)**

Click on the course title to see detailed informations (objectives, methods, evaluation...)

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Teaching Language</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LELEC1930</td>
<td>Introduction to telecommunication</td>
<td>Jérôme Louveaux</td>
<td>FR</td>
<td>[q2]</td>
<td>[30h+15h]</td>
</tr>
<tr>
<td>1</td>
<td>LELEC2753</td>
<td>Electrical power systems: advanced topics and smart grids</td>
<td>Emmanuel De Jaeger</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+15h]</td>
</tr>
<tr>
<td>1</td>
<td>LELEC2920</td>
<td>Communication networks</td>
<td>Sébastien Lugan Benoît Macq</td>
<td>EN</td>
<td>[q1]</td>
<td>[30h+15h]</td>
</tr>
<tr>
<td>1</td>
<td>LENVI2007</td>
<td>Renewable energy sources</td>
<td>Emmanuel De Jaeger Patrick Gerin (coord.) Hervé Jeannart</td>
<td>EN</td>
<td>[q1]</td>
<td>[15h+15h]</td>
</tr>
<tr>
<td>1</td>
<td>LINMA2370</td>
<td>Modelling and analysis of dynamical systems</td>
<td>Jean-Charles Delvenne</td>
<td>EN</td>
<td>[q1]</td>
<td>[30h+22.5h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA1451</td>
<td>Mechanical manufacturing.</td>
<td>Laurent Delannay Aude Simar</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+30h]</td>
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<tr>
<td>1</td>
<td>LELME2240</td>
<td>Energy systems lab.</td>
<td>Francesco Contino Hervé Jeannart</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+30h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2325</td>
<td>Biomass conversion</td>
<td>Patrick Gerin Hervé Jeannart</td>
<td>EN</td>
<td>[q1]</td>
<td>[30h+30h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2410</td>
<td>Mechanics of Materials</td>
<td>Laurent Delannay Aude Simar</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+30h]</td>
</tr>
<tr>
<td>1</td>
<td>LELME2420</td>
<td>Energetics.</td>
<td>Francesco Contino Hervé Jeannart</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+15h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2645</td>
<td>Major technological hazards in industrial activity.</td>
<td>Denis Dochain Aude Simar</td>
<td>FR</td>
<td>[q2]</td>
<td>[30h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2771</td>
<td>Thermodynamics of irreversible phenomena.</td>
<td>Miltiadis Papalexandris</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+30h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2780</td>
<td>Introduction to Turbomachinery</td>
<td>Laurent Bricteux Sergio Lavagnoli</td>
<td>EN</td>
<td>[q2]</td>
<td>[30h+30h]</td>
</tr>
<tr>
<td>1</td>
<td>LMECA2801</td>
<td>Machine design</td>
<td>Benoît Raucent Thomas Servais (compensates Benoît Raucent)</td>
<td>EN</td>
<td>[q1]</td>
<td>[30h+30h]</td>
</tr>
</tbody>
</table>
OPTIONS ET COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

BUSINESS RISKS AND OPPORTUNITIES

- Mandatory
- Optional
- ∆ Not offered in 2022-2023
- ⊗ Not offered in 2022-2023 but offered the following year
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- ⊗ ⊗ Not open to incoming exchange students
- ⊗ ⊗ ⊗ Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Year
1 2

Content:

- **LEPL2211** Business issues introduction
  - Benoît Gailly
  - [q2] [30h] [3 Credits]

- **LEPL2212** Financial performance indicators
  - André Nsabimana
  - [q2] [30h+5h] [4 Credits]

- **LEPL2214** Law, Regulation and Legal Context
  - Vincent Cassiers Werner Derycke
  - [q1] [30h+5h] [4 Credits]

One course between
From 3 to 5 credit(s)

- **LEPL2210** Ethics and ICT
  - Axel Gosselies
  - [q2] [30h] [3 Credits]

- **LLSMS2280** Business Ethics and Compliance Management
  - Carlos Desmet
  - [q1] [30h] [5 Credits]

Cours en marketing

- **MGEST1108** Marketing
  - Nada Sinigaglia
  - [q2] [45h+20h] [6 Credits]

- **MLSM2136** Trends in Digital Marketing
  - Ingrid Poncin
  - [q2] [30h] [5 Credits]

- **MLSM2134** e-Consumer Behavior
  - Karine Charruy
  - [q2] [30h] [5 Credits]

Cours en Sourcing and Procurement

- **LLSMS2036** Supply Chain Procurement
  - Constantin Blome
  - [q1] [30h] [5 Credits]

- **LLSMS2038** Procurement Organisation and Scope
  - Constantin Blome
  - [q1] [30h] [5 Credits]

- **LLSMS2037** Sourcing Strategy
  - Constantin Blome
  - [q1] [30h] [5 Credits]

Alternative to the major in business risks and opportunities for computer science students

Computer science students who have already taken courses in this field while pursuing their Bachelor's degree may choose between 16-20 credits from the courses offered in the management minor for computer sciences.
### MAJOR IN SMALL AND MEDIUM SIZED BUSINESS CREATION

Commune à la plupart des masters de l'EPL, cette option a pour objectif de familiariser l'étudiant·e avec les spécificités de l'entrepreneuriat et de la création d'entreprise afin de développer chez lui les aptitudes, connaissances et outils nécessaires à la création d'entreprise.

Cette option rassemble des étudiants de différentes facultés en équipes interdisciplinaires afin de créer un projet entrepreneurial. La formation interdisciplinaire en création d’entreprise (CPME) est une option qui s’étend sur 2 ans et s’intègre dans plus de 30 Masters de 9 facultés/écoles de l’UCLouvain. Le choix de l’option CPME implique la réalisation d’un mémoire interfacultaire (en équipe) portant sur un projet de création d’entreprise. L’accès à cette option, ainsi qu’à chacun des cours, est limité aux étudiant·es sélectionnés sur dossier. Toutes les informations sur www.uclouvain.be/cpme.

L’étudiant·e qui choisit de valider cette option doit sélectionner au minimum 20 crédits et au maximum 25 crédits. Cette option n'est pas accessible en anglais et ne peut être prise simultanément avec l'option « Enjeux de l'entreprise ».

#### Content:

- **Mandatory**
- **Optional**
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- ⊗ Not offered in 2022-2023 but offered the following year
- ⊕ Offered in 2022-2023 but not the following year
- ⊔ Not offered in 2022-2023 or the following year
- ✗ Activity with requisites
- ✗ Open to incoming exchange students
- ✗ Not open to incoming exchange students
- ✗ Teaching language (FR, EN, ES, NL, DE, ...)

### Required courses for the major in small and medium sized businesses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Instructor(s)</th>
<th>Year</th>
<th>Credits</th>
<th>Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPME2001</td>
<td>Théorie de l'entrepreneuriat</td>
<td>Frank Janssen</td>
<td>⊔</td>
<td>5</td>
<td>⊔</td>
<td>5</td>
</tr>
<tr>
<td>LCPME2002</td>
<td>Aspects juridiques, économiques et managériaux de la création d'entreprise</td>
<td>Yves De Cordt, Marine Falize</td>
<td>⊔</td>
<td>5</td>
<td>⊔</td>
<td>5</td>
</tr>
<tr>
<td>LCPME2003</td>
<td>Plan d'affaires et étapes-clés de la création d'entreprise</td>
<td>Frank Janssen</td>
<td>⊔</td>
<td>5</td>
<td>⊔</td>
<td>5</td>
</tr>
<tr>
<td>LCPME2004</td>
<td>Séminaire d'approfondissement en entrepreneuriat</td>
<td>Frank Janssen</td>
<td>⊔</td>
<td>5</td>
<td>⊔</td>
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</tr>
</tbody>
</table>

### Prerequisite CPME courses

*Student who have not taken management courses during their previous studies must enroll in LCPME2021.*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Instructor(s)</th>
<th>Year</th>
<th>Credits</th>
<th>Year</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPME2021</td>
<td>Financer son projet</td>
<td>Yves De Rongé</td>
<td>⊔</td>
<td>5</td>
<td>⊔</td>
<td>5</td>
</tr>
</tbody>
</table>
**COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES**

- **Mandatory**
- **Optional**
- △ Not offered in 2022-2023
- ⊔ Not offered in 2022-2023 but offered the following year
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- △ ⊔ Not offered in 2022-2023 or the following year
- □ Activity with requisites.
- ⊉ Open to incoming exchange students
- ⊈ Not open to incoming exchange students
- ⊗ Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

<table>
<thead>
<tr>
<th>Content:</th>
</tr>
</thead>
</table>
| **LFSA2995** | Company Internship | Dimitri Lederer  
Jean-Pierre Raskin | [q1+q2] [30h] [10 Credits] |
| **LFSA2212** | Innovation classes | Benoît Macq  
Jean-Pierre Raskin  
Benoît Raucent | [q1] [30h+15h] [5 Credits] |
| **LELEC2590** | Seminars in electronics and communications | Denis Flandre  
Isabelle Huynen  
Jérôme Louveaux | [q2] [30h] [3 Credits] |
| **LMECA2711** | Quality management and control. | Nicolas Bronchart | [q2] [30h+30h] [5 Credits] |
| **LINMA2415** | Quantitative Energy Economics | Gauthier de Maere d'Aertrycke  
(compensates Anthony Papavasilou) | [q2] [30h+22.5h] [5 Credits] |
| **LMECA2645** | Major technological hazards in industrial activity. | Denis Dochain  
Aude Simar | [q2] [30h] [3 Credits] |
| **LLSMS2034** | Supply Chain Planning | Marc Foret  
Mathieu Van Vyve | [q2] [30h] [5 Credits] |
| **LSTAT2380** | Statistical consulting | Christian Ritter | [q1+q2] [30h+22.5h] [5 Credits] |
| **LSTAT2390** | Applied statistics workshops | Catherine Legrand  
Christian Ritter | [q1+q2] [15h] [3 Credits] |
### OTHERS ELECTIVE COURSES

<table>
<thead>
<tr>
<th>Year</th>
<th>Content:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Les étudiant·es peuvent également inscrire à leur programme tout cours faisant partie des programmes d'autres masters de l'EPL moyennant l'approbation du jury restreint.</td>
</tr>
</tbody>
</table>

#### Languages

Students may select from any language course offered at the ILV. Special attention is placed on the following seminars in professional development:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator</th>
<th>Language(s)</th>
<th>Credit Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALLE2500</td>
<td>Professional development seminar German</td>
<td>Caroline Klein (coord.)</td>
<td>DE</td>
<td>[q1+q2] [30h] [3 Credits]</td>
<td>X X</td>
</tr>
<tr>
<td>LALLE2501</td>
<td>Professional development seminar-German</td>
<td>Caroline Klein (coord.)</td>
<td>DE</td>
<td>[q1+q2] [30h] [5 Credits]</td>
<td>X X</td>
</tr>
<tr>
<td>LESPA2600</td>
<td>Vocational Induction Seminar - Spanish (B2,2/C1)</td>
<td>Rocio Cuberos Vicente Paula Lorente Fernandez (coord.)</td>
<td>ES</td>
<td>[q1] [30h] [3 Credits]</td>
<td>X X</td>
</tr>
<tr>
<td>LESPA2601</td>
<td>Vocational Induction Seminar - Spanish (B2,2/C1)</td>
<td>Rocio Cuberos Vicente Paula Lorente Fernandez (coord.)</td>
<td>ES</td>
<td>[q1] [30h] [5 Credits]</td>
<td>X X</td>
</tr>
<tr>
<td>LNEER2500</td>
<td>Seminar of Entry to professional life in Dutch - Intermediate level</td>
<td>Marie-Laurence Lambrecht (coord.)</td>
<td>NL</td>
<td>[q1 or q2] [30h] [3 Credits]</td>
<td>X X</td>
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<tr>
<td>LNEER2600</td>
<td>Seminar of entry to professional life in Dutch - Upper-Intermediate level</td>
<td>Dag Houdmont Marie-Laurence Lambrecht (coord.)</td>
<td>NL</td>
<td>[q1 or q2] [30h] [3 Credits]</td>
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</table>

#### Group dynamics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Coordinator</th>
<th>Language(s)</th>
<th>Credit Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEPL2351</td>
<td>Group dynamics - Q1</td>
<td>Delphine Ducarme Claude Oestges (coord.) Thomas Pardoen Benoît Raucent</td>
<td>FR</td>
<td>[q1] [15h+30h] [3 Credits]</td>
<td>X X</td>
</tr>
<tr>
<td>LEPL2352</td>
<td>Group dynamics - Q2</td>
<td>Delphine Ducarme Claude Oestges (coord.) Thomas Pardoen Benoît Raucent</td>
<td>FR</td>
<td>[q2] [15h+30h] [3 Credits]</td>
<td>X X</td>
</tr>
</tbody>
</table>

#### Autres UEs hors-EPL

L'étudiant·e peut choisir maximum 8 ects de cours hors EPL considérés comme non-disciplinaires par la commission de diplôme.
Course prerequisites

The table below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

These activities are also identified in the detailed programme: their title is followed by a yellow square.

Prerequisites and student’s annual programme

As the prerequisite is for CU registration purposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme’s CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

• require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
• transform a prerequisite into a corequisite if the student is in the final year of a degree course.


# Prerequisites list

<table>
<thead>
<tr>
<th>CU Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLSMM2134</td>
<td>&quot;E-comportement du consommateur&quot;</td>
<td>MGEST1108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MGEST1108 - Marketing</td>
</tr>
<tr>
<td>MLSMM2136</td>
<td>&quot;Tendances en Digital Marketing&quot;</td>
<td>MGEST1108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MGEST1108 - Marketing</td>
</tr>
</tbody>
</table>

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.
ELME2M - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the higher education landscape and the academic organisation of courses.

General and specific admission requirements for this programme must be satisfied at the time of enrolling at the university.

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.

SUMMARY

• General access requirements
• Specific access requirements
• University Bachelors
• Non university Bachelors
• Holders of a 2nd cycle University degree
• 🟠 Holders of a non-University 2nd cycle degree
• 🟠 Access based on validation of professional experience
• 🟠 Access based on application
• 🟠 Admission and Enrolment Procedures for general registration

Specific access requirements

This programme is taught in English with no prerequisite in French. A certificate is required for the holders of a non-Belgian degree, see selection criteria of the Access on the file.

University Bachelors

<table>
<thead>
<tr>
<th>Diploma</th>
<th>Special Requirements</th>
<th>Access</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCLouvain Bachelors</td>
<td></td>
<td>Direct access</td>
<td>Students who have neither major nor minor in the field of their civil engineering Master’s degree may have an adapted master programme.</td>
</tr>
<tr>
<td>Bachelor in Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others Bachelors of the French speaking Community of Belgium</td>
<td></td>
<td>Direct access</td>
<td>Students with a Bachelor’s degree in engineering sciences who have not taken the equivalent of a minor in the field of their civil engineering master degree may have an adapted master programme.</td>
</tr>
<tr>
<td>Bachelor in Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors of the Dutch speaking Community of Belgium</td>
<td></td>
<td>Access with additional training</td>
<td>Students who have no specialisation in the field of their civil engineering master degree may have an adapted master programme with up to 60 additional credits.</td>
</tr>
<tr>
<td>Bachelor in engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign Bachelors</td>
<td></td>
<td>Direct access</td>
<td>Students with a Bachelor’s degree in engineering sciences who have not taken the equivalent of a minor in the field of their civil engineering master</td>
</tr>
<tr>
<td>Bachelor in engineering</td>
<td>Bachelor degree of Cluster Institution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bachelor in Engineering | For others institutions | Access based on application | See Personalized access
---|---|---|---

Non university Bachelors

> Find out more about links to the university

<table>
<thead>
<tr>
<th>Diploma</th>
<th>Special Requirements</th>
<th>Access</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Licenciés&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Holders of a 2nd cycle University degree

<table>
<thead>
<tr>
<th>Masters in engineering</th>
<th></th>
<th>Direct access</th>
<th></th>
</tr>
</thead>
</table>

Holders of a non-University 2nd cycle degree

> Find out more about links to the university

Access based on validation of professional experience

> It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about Validation of prior experience.

Access based on application

Access based on application: access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.


Selection criteria are summarized here (contact: epl-admission@uclouvain.be).

Admission and Enrolment Procedures for general registration
Teaching method

The majority of classes consist of lectures and tutorials. The tutors are upper-class students who have specialised tutor training (the class LEPL2351). This class provides its participants with practical tutoring techniques to help fellow students.

Methods that promote multidisciplinary studies

UCL’s Master’s degree programme in electro-mechanics is by nature multidisciplinary because it combines classes in electricity, mechanics, automation and computer sciences. It also includes non-engineering elective classes such as economics, management and languages.

Various teaching strategies

Through a pedagogy that prioritises projects that integrate several subjects, students gain critical thinking skills, which in turn allows them to design, model, and create electro-mechanic prototypes and systems.

In the last year of the programme, half of the time is devoted to the graduation project, which offers students the possibility of working as part of a research team or collaborating with the industrial sector to study a given subject in-depth. It provides an introduction to the actual working life of an engineer or researcher (thanks to the size of the project and the context within which it is carried out).

Diverse learning situations

Various pedagogical approaches are used: lectures, projects, exercise sessions, problem solving sessions, case studies, experimental laboratories, computer simulations, educational software, internships in industry or research, factory visits, seminars and group as well as individual work. In certain subjects, eLearning allows students to learn at their own pace and carry out virtual experiments.

These diverse learning situations permit students to build their knowledge in an iterative and progressive manner all the while developing their independence, organisational and time management skills as well as their ability to communicate. Students have access to the newest information technology (materials, software, networks) during their studies.

Evaluation

The evaluation methods comply with the regulations concerning studies and exams ([link](https://uclouvain.be/fr/decouvrir/rgee.html)). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading “Learning outcomes evaluation method”.

Student work is evaluated according to University rules (see the rules for evaluating coursework and exams) namely written and oral exams, laboratory reports, individual or group work, public presentations of projects and theses defences.

ELME Evaluation Methods:

<table>
<thead>
<tr>
<th>Learning outcomes</th>
<th>Certificate-based evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate mastery of a solid body of knowledge in basic science and engineering science allowing the student to learn and solve problems pertaining to electro-mechanics (axis 1)</td>
<td>• End of the semester exam based on course exercises</td>
</tr>
<tr>
<td>Organise and carry out an applied engineering process to develop a product and/or service responding to a particular need or problem in the field of electro-mechanics. (Axis 2)</td>
<td>• Tests in some introductory classes</td>
</tr>
<tr>
<td>Organise and carry out a research project to learn about a physical phenomenon or a new problem relating to the field of electro-mechanics. (Axis 3)</td>
<td>• Report on mini project in field of study</td>
</tr>
<tr>
<td>Contribute, through teamwork, to a multidisciplinary project and carry out the project while taking into account its objectives, resources, and constraints. (Axis 4)</td>
<td>• Progress report on multidisciplinary project</td>
</tr>
<tr>
<td>Communicate effectively (speaking or writing in French or a foreign language) with the goal of carrying out assigned projects. (Axis 5)</td>
<td>• Report, public presentation, and yearly work for graduation project</td>
</tr>
<tr>
<td>Display rigour, openness, and critical thinking; validate the socio-technical relevance of a hypothesis or a solution, all the while drawing upon available technological and scientific innovations. (Axis 6)</td>
<td>• Practice presentations before graduation project presentations</td>
</tr>
</tbody>
</table>

In certain instances, teaching is done through multidisciplinary project, the Learning by Problem Solving method (Apprentissage par problemes ou APP), flipped classes or seminars.

The certificate-based evaluation are coherent with the teaching methods and the learning outcomes.

The formative evaluation is achieved in part during the projects via tutor feedback and above all during the graduation project.

For more information on evaluation methods, students may consult the relevant evaluation descriptions.

Mobility and/or Internationalisation outlook

Since its creation, the Louvain School of Engineering (EPL) has participated in diverse exchange programs ([link](https://uclouvain.be/fr/facultes/epl/mobilite-internationale.html)) that were put into place at the European level and beyond.
Possible trainings at the end of the programme

Specialised Master’s Degrees

• Specialised Master’s Degree in Nanotechnology
• Specialised Master’s Degree in Nuclear Engineering
• Specialised Master’s Degree in Biotechnology and Applied Biology

Doctoral Programmes

Most doctoral students study at the Institute of Information and Communication Technologies, Electronics and Applied Mathematics as well as the Institute of Mechanics, Materials and Civil Engineering. The faculty of these Institutes participate in numerous doctoral programmes. A comprehensive list is available from the President of the Third Cycle Commission.

UCL Master’s degrees (about 60) are accessible to UCL Master’s degree holders

For example:

• The Master’s degree (120) in sciences and environmental management (automatic admission with possible complementary coursework)
• Different Master’s degree programmes in management (automatic admission based on written application): see this list
• The Master’s degree (60) in information and communication at Louvain-la-Neuve or the Master’s degree (60) in information and communication at Mons

Contacts

Curriculum Management

<table>
<thead>
<tr>
<th>Entity</th>
<th>Denomination</th>
<th>Faculty</th>
<th>Sector</th>
<th>Acronym</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure entity</td>
<td>SST/EPL/ELME</td>
<td>Louvain School of Engineering</td>
<td>Sciences and Technology (SST)</td>
<td>ELME</td>
</tr>
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<td>ELME</td>
</tr>
<tr>
<td>Postal address</td>
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<td>Louvain School of Engineering</td>
<td>Sciences and Technology (SST)</td>
<td>ELME</td>
</tr>
</tbody>
</table>

Academic supervisor: Emmanuel De Jaeger

Jury

• Claude Oestges
• Bruno Dehez

Useful Contact(s)

• Isabelle Dargent