UCLouvain

NRGY2M

2023 - 2024

Master [120] in Energy Engineering

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 : **optional**
Activities on other sites : **optional**
Main study domain : **Sciences de l'ingénieur et technologie**
Organized by: **Louvain School of Engineering (EPL)**
Programme acronym: **NRGY2M** - Francophone Certification Framework: 7

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NRGY2M - Teaching profile

Learning outcomes

ntegrating 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 UCLouvain 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).
- Individuals with field experience capable of putting into practice their knowledge of research and technology.
- Managers in charge of projects involving teams.

Axis 2)

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.

electo-mechanics

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)
- Electrotechnics (conversion, controls, actuation)
- Electronics (digital electronics, instrumentation, sensors)
- Automation
- Computer sciences (real time)
- Mechanics (modeling, design)
- Robotics and automation.

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, electrotechnics
or information technology) and respond to problem specifications.
2.3. Evaluate and classify solutions with regards to all the specification criteria: efficiency, feasibility, ergonomic qual.0750138nction,5 toolws ag438 Tm [

				Year 1	2
LELEC2811	Instrumentation and sensors	David Bol Laurent Francis	EN [q1] [30h+30h] [5 Credits] > *French-friendly*	x	x
LELEC2660	Power electronics	Marc Bekemans	EN [q2] [30h+15h] [5 Credits] > *French-friendly*	x	x
LELME2003	Project in energy	Francesco Contino (compensates Hervé Jeanmart) Emmanuel De Jaeger	EN [q2] [30h+0h] [5 Credits] > *French-friendly*	x	x
LELME2313	Dynamic modelling and control of electromechanical converters	Emmanuel De Jaeger Bruno Dehez	EN [q1] [30h+30h] [5 Credits] > *French-friendly*	x	x
LELME2990	Graduation project/End of studies project *The 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.*		EN [q1+q2] [] [25 Credits] > *French-friendly*		x
LEPL2020	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 qu'au*				

MAJOR IN NUCLEAR ENGINEERING

- O Mandatory
- ⊠ Optional
- △ Not offered in 2023-2024
- ⊘ Not offered in 2023-2024 but offered the following year
- ⊕ Offered in 2023-2024 but not the following year
- △ ⊕ Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Year

Year

OPTIONS ET COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

BUSINESS RISKS AND OPPORTUNITIES

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Content:

				Year 1	Year 2
LEPL2211	Business issues introduction	Benoît Gailly	EN [q2] [30h] [3 Credits] *> French-friendly*	x	x
LEPL2212	Financial performance indicators	Anne-Catherine Provost	EN [q2] [30h+5h] [4 Credits] *> French-friendly*	x	x
LEPL2214	Law, Regulation and Legal Context	Vincent Cassiers Werner Derycke	FR [q1] [30h+5h] [4 Credits]		

COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

OTHERS ELECTIVE COURSES

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Year
1 2

Content:

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.

Languages

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

LALLE2500	Professional development seminar German	

Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the 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.

NRGY2M - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the hiher 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

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

Diploma	Special Requirements	

Bachelor in Engineering	For others institutions	Access based on application	See Personalized access

Non university Bachelors

> Find out more about links to the university

Holders of a 2nd cycle University degree

Diploma

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

UCLouvain'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

Possible trainings at the end of the programme

Specialised Master's Degrees

- Advanced Master in Nanotechnologies
- Advanced Master 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 [120] in Environmental Science and Management (automatic admission with possible complementary coursework)
- Different Master's degree programmes in management (automatic admission based on written application)
- The Master [60] in Information and Communication at Louvain-la-Neuve or the Master [60] in Information and Communication at Mons

Contacts

Curriculum Management

Entity