



NRGY2M

2024 - 2025

NRGY2M - Introduction

Introduction

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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;

NRGY2M -

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. Be rigorous, open-minded and critical: 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 (52 credits)
- A final specialisation (30 credits)
- One or 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.

NRGY2M Programme

Detailed programme by subject

CORE COURSES

- Mandatory
- ✂ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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...)

● LINMA1510

Year










1 2

● LELEC2811

LIST OF ELECTIVES

MAJOR IN NUCLEAR ENGINEERING

- Mandatory
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-

				Year	
				1	2
⊗ LMECA2780	Introduction to Turbomachinery	Laurent Bricteux Sergio Lavagnoli	EN [q2] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LMECA2801	Machine design	Yorick Havelange (compensates Benoît Raucent) Benoît Raucent	EN [q1] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LMECA2802	Multibody system Dynamics	Paul Fissette	EN [q2] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LELME2311	Physics of Electromechanical Converters	Bruno Dehez	EN [q2] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LELEC2330	Opto-electronic and power devices	Denis Flandre Laurent Francis (coord.)	EN [q1] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LELEC2595	Electrical power systems dynamics and quality of supply	Emmanuel De Jaeger	EN [q2] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LELEC2753	Electrical power systems: advanced topics and smart grids	Emmanuel De Jaeger	EN [q2] [30h+15h] [5 Credits]  > French-friendly	X	X
⊗ LELEC2870	Machine learning : regression, deep networks and dimensionality reduction	John Lee John Lee (compensates Michel Verleysen) Michel Verleysen	EN [q1] [30h+30h] [5 Credits]  > French-friendly	X	X
⊗ LGCIV2052	Hydropower plants	Sandra Soares Frazao	EN [q2] [20h] [3 Credits]  > French-friendly	X	X
⊗ LMAPR1492	Materials physics	Jean-Christophe Charlier Xavier Gonze Luc Piraux Gian-Marco Rignanese	FR [q2] [37.5h+22.5h] [5 Credits] 	X	

OPTIONS ET COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

BUSINESS RISKS AND OPPORTUNITIES

**MAJOR IN INTERDISCIPLINARY PROGRAM IN ENTREPRENEURSHIP -
INEO**

COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

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Year

1 2

o Content:

OTHERS ELECTIVE COURSES

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Year

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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

[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	Special Requirements	Access	Remarks
"Licenciés"			

Masters
