

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**

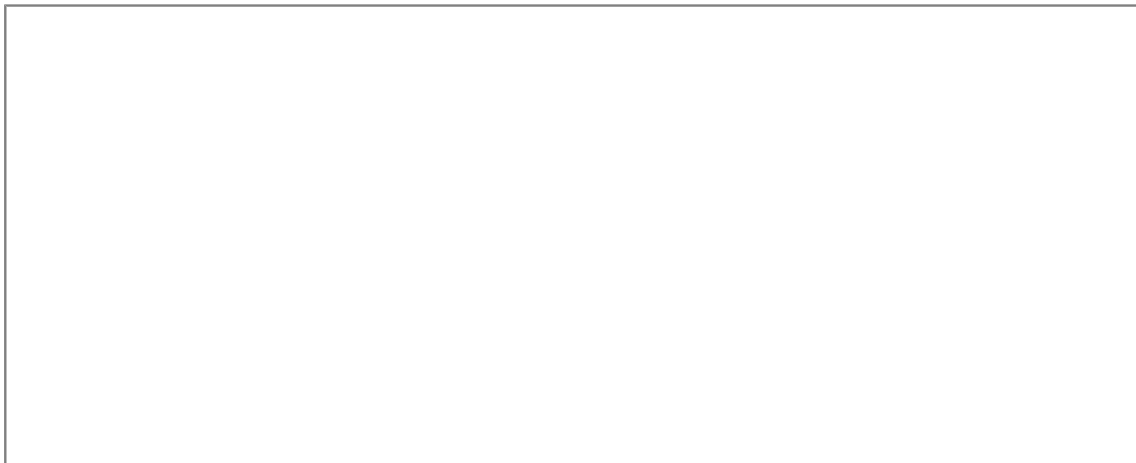
Activities on other sites : **NO**

Main study domain : **Sciences de l'ingénieur et technologie**

Organized by: **Louvain School of Engineering (EPL)**

Programme acronym: **FYAP2M** - Francophone Certification Framework: 7

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PROFESSIONAL FOCUS [30.0]

- 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...)

Year

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o Content:

○ LMAPR2014	Physics of Functional Materials	Xavier Gonze Luc Piraux Samuel Poncé Gian-Marco Rignanese	EN [q1] [37.5h+22.5h] [5 Credits] 🌐 > French-friendly		X	
○ LMAPR2451	Atomistic and nanoscopic simulations	Jean-Christophe Charlier Xavier Gonze Gian-Marco Rignanese	EN [q2] [30h+30h] [5 Credits] 🌐 > French-friendly		X	
○ LMAPR2471	Transport phenomena in solids and nanostructures	Jean-Christophe Charlier Luc Piraux	EN [q2] [30h+30h] [5 Credits] 🌐 > French-friendly		X	
○ LMAPR2481	Deformation and fracture of materials	Hosni Idrissi Thomas Pardoën	EN [q1] [30h+30h] [5 Credits] 🌐 > French-friendly		X	X
○ LPHYS2143	Optics and lasers	Clément Lauzin	EN [q1] [22.5h+22.5h] [5 Credits] 🌐 > French-friendly		X	X
○ LMAPR2019A	Polymer Science and Engineering-Physics	Sophie Demoustier				

OPTIONS

Dans la rubrique "Options du master ingénieur civil physicien", l'étudiant-e doit valider au moins une des options proposées.
Dans la rubrique "Options et cours au choix en connaissances socioéconomiques", l'étudiant-e valide une des deux options ou choisit obligatoirement au minimum 3 crédits parmi les cours au choix ou les cours de l'option en enjeux de l'entreprise.

Majors for the Master's degree in physics

- > [Major in Advanced Engineering Physics](#) [en-prog-2024-fyap2m-lfyap221o]
- > [Major in nanotechnology](#) [en-prog-2024-fyap2m-lfyap225o]
- > [Major advanced electronic materials and devices](#) [en-prog-2024-fyap2m-lfyap223o]

Options et cours au choix en connaissances socio-économiques

- > [Business risks and opportunities](#) [en-prog-2024-fyap2m-lfyap230o]
- > [Major in Interdisciplinary Program in Entrepreneurship - INEO](#) [en-prog-2024-fyap2m-lfyap231o]
- > [Cours au choix en connaissances socio-économiques](#) [en-prog-2024-fyap2m-lfyap200o]




Others elective courses

- > [Others elective courses](#) [en-prog-2024-fyap2m-lfyap952o]
-

Year

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⌘ Numerical simulations

⌘ LMAPR2483	Durability of materials	Laurent Delannay Thomas Pardoën	EN [q2] [30h+22.5h] [5 Credits]  > French-friendly	X	X
⌘ LMECA2300	Advanced Numerical Methods	Philippe Chatelain Christophe Craeye (coord.) Vincent Legat Jean-François Remacle	EN [q2] [30h+30h] [5 Credits]  > French-friendly	X	X
⌘ LPHYS1303	Numerical Simulation in Physics	Francesco Ragone	EN [q1] [22.5h+30h] [5 Credits]  > English-friendly	X	X

⌘ Fundamental concepts of physics

⌘ LPHYS1231	Special Relativity	Marco Drewes	EN [q2] [30h+15h] [5 Credits] 	X	X
⌘ LPHYS2242	Fundamentals of quantum information	Matthieu Génévriez (coord.) Sorin Melinte Bernard Piraux	EN [q2] [30h] [5 Credits]  > French-friendly	X	X
○ LPHYS1346	Physique subatomique	Christophe Delaere	EN [q2] [22.5h+22.5h] [5 Credits] 	X	X
○ LPHYS1347	Physique atomique et moléculaire	Matthieu Génévriez Clément Lauzin	EN [q2] [22.5h+22.5h] [5 Credits] 	X	X

MAJOR IN NANOTECHNOLOGY

OPTIONS ET COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

[3.0]

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

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 entrepreneuriat (INEO) 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 INEO 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 <https://uclouvain.be/fr/etudier/ineo>.

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 ».

- Mandatory
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COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUES

● Mandatory

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⊗ LNEER2500

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.

degree may have an adapted
master programme.

Teaching method

Methods that promote multidisciplinary studies

The Master's degree programme in physical engineering is interdisciplinary because acts as an interface between physics and materials science. Its versatile foundation exposes students to the wide scope of applied physics from practical training and cutting edge research to majors in the main branches of physics and materials science: nano-technologies, materials science, photovoltaics, fundamental and applied physics and light-matter interaction. Students also have the possibility of studying management thanks to majors in management and small and medium sized business creation. The programme includes a significant portion of the classes with the PHYS (or PHY) designation as well as MATH, INMA and MECA classes, which is evidence of the programme's multidisciplinary nature. Finally students are allowed to select up to 40 credits of elective courses offered as part of the programmes in natural sciences or medicine at UCLouvain and up to 6 credits of courses in human sciences, which allows for tailor made course schedules.

Various teaching strategies

The pedagogy used in the Master's degree programme in physical engineering is consistent with that of the Bachelor's degree programme in engineering sciences: active learning, an equal mix of group work and individual work, and emphasis on the development of non-technical skills. A major characteristic of the programme is the immersion of students in professors' research laboratories (and at times teaching laboratories, case studies, projects, theses) that expose students to advanced methods used in the discipline and allows them to learn by questioning, a process inherent in the research process. An optional 9-week internship of 10 credits (or 5 credits if completed alongside a thesis) places students at the centre of research and allows them to develop their skills through their contact with the professional world.

Diverse learning situations

Students will be exposed to varied pedagogical methods: lectures, projects, exercise tutorials, problem-solving sessions, case studies, experimental laboratories, computer simulations, internships in industry or research, graduation projects, group work, individual work, conferences given by outside researchers, exposure to cutting edge research, etc. This variety of teaching techniques allows students to learn in an iterative and progressive manner all the while developing their autonomy as well as their organisational, time management and communication skills.

Evaluation

The evaluation methods comply with the [regulations concerning studies and exams](#). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Evaluation methods conform to the rules used to evaluate coursework and exams. Further details about the methods specific to each academic department may be found in their respective evaluation descriptions ("Evaluating students' knowledge").

Student work is evaluated according to University rules (see the rules for evaluating coursework and exams) namely written and oral exams, laboratory exams, individual or group work, public presentations of projects and theses defences. Professors provide details about evaluation methods used in their courses at the beginning of each semester.

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

To obtain a passing grade, the marks received for the teaching units are offset by their respective credits.

Mobility and/or Internationalisation outlook

Over the years, EPL has developed over a hundred partnerships with partners in more than 36 countries (EU and non-EU) to offer exchange programmes to its students. We also offer the possibility of obtaining Double degrees, Joint Degrees or Dual Masters in several fields. The EPL is currently participating in two Erasmus Mundus programmes: [FAME](#) and [STRAINS](#).

In addition to exchange programmes under the Erasmus+ programme, numerous agreements have been established with a wide range of universities through various partner networks such as:

- [TIME](#) network (Top Industrial Managers in Europe).
- [CLUSTER](#) network
- [Magalhães](#) network
- [Circle U](#). network through several networks and European University Alliance

So, there's no shortage of opportunities to gain an additional qualification and/or spend part of the year abroad during your two-year Master's degree! It's the perfect opportunity to discover or improve your knowledge of a foreign language, tackle subjects from a new angle and gain unique experience in Europe or the rest of the world.

If you would like more information, please visit the dedicated pages of the [EPL International Office](#) to discover all the destinations, testimonials from former students and all the procedures to follow to make these opportunities a success.

Possible trainings at the end of the programme

Master's degree programmes

The [Advanced Master in Nanotechnologies](#) and the [Advanced Master in Nuclear Engineering](#) of the M.A. in physical engineering.

Doctoral degree programmes

The Master's degree programme in physical engineering prepares students for doctoral programmes. The programme's professors are members of the MAIN ("Materials, Interfaces and Nanotechnology) doctoral programme and interested students are welcome to pursue a doctoral degree.

UCLouvain Master's degrees (about 60) are accessible to UCLouvain Master's degree holders

For example:

- 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

Structure entity

SST/EPL/FYKI

Denomination

(FYKI)

Faculty

Louvain School of Engineering (EPL)

Sector

Sciences and Technology (SST)

Acronym

FYKI

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