

KIMA2M

2013 - 2014

Master [120] in Chemical and Materials Engineering

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In frenchDissertation/Graduation Project : **YES** - Internship : **optional**Activities in English: **YES** - Activities in other languages : **NO**Activities on other sites : **optional**Main study domain : **Sciences de l'ingénieur**Organized by: **Ecole Polytechnique de Louvain (EPL)**Programme code: **kima2m** - European Qualifications Framework (EQF): 7**Table of contents**

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KIMA2M - Introduction

KIMA2M - Admission

For the specific conditions of this program : refer to the French version

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

KIMA2M - Information

Learning outcomes

The Master's degree in chemical and materials science engineering (KIMA) is a comprehensive and modular training which provides students with the basics of varied application fields, from chemical engineering to process engineering to nanotechnologies to the physics of advanced electronic and magnetic materials, via environmental engineering, sustainable development, and materials science engineering. This curriculum answers the needs of various technical professions and their fast-changing evolution : its comprehensiveness allows one to adapt to rapidly changing technologies and the broad diversity of job opportunities in the fields of chemistry and materials technology, while also developing cutting-edge competencies via the choice of coherent course modules (called 'options'). As a rule, this training is based on the conviction that learning through and towards research is the best way to build a student's knowledge (academic knowledge, practical knowledge, and behaviour). Throughout the training, the student will therefore have many opportunities to visit experimental laboratories. Industrial visits and a traineeship can complement the training by familiarizing the student with the day-by-day concerns of industrial life.

Teaching method

. Features favouring interdisciplinarity :

The Master's in chemistry and materials science is intrinsically interdisciplinary, since it is located at the interface between chemistry and physics. It features a comprehensive base allowing the student to acquire the basics of the main application fields of applied chemistry and physics, a training through practice and cutting edge research, and various options in each field of chemistry and materials technology : polymers and macromolecules, inorganic materials and processes, mechanics of materials, chemical engineering, nanotechnology, optics, and environment and sustainable development. An integration of biotechnologies is ensured via the option in bio-materials et bio-processes, whereas management is included via options in management and the launching of small and medium-sized companies. The curriculum features a significant number of PHYS (or PHY), CHIM (or CHM), BIOL, INIS, INMA, MECA, ELEC, AMCO, BRNA and BIR courses, which testifies as to the determination to be trans-disciplinary . What's more, the curriculum permits to choose up to 40 elective credits from amongst the UCL exact or medical sciences curricula, and up to 6 credits in the humanities, which allows a student to customize a curriculum depending on personal choices.

. Variety of teaching situations :

The pedagogy implemented in the engineering Master's curriculum is aligned with that of the engineering Bachelor's curriculum: active learning, a balanced mix of group and individual work, and substantial time devoted to the development of non-technical competencies. A salient feature of the curriculum is the immersion of students in the research laboratories of the various instructors (during teaching laboratory sessions, case studies, projects and final thesis), which allows them to become familiar with up-to-date methods in the related fields, and to learn through the questioning approach which is inherent to research. An optional 10-credit training period, to be performed for at least 2 months in a research centre or a company, will allow a motivated student to experience a professional environment.

. Variety of learning situations :

The student will encounter a variety of pedagogical tools tailored to the various disciplines : formal lectures, individual projects in small groups, tutorials, project-based learning, case studies, experimental laboratory work, computer simulations, teachware, industrial or research training, visits to industries, individual and group work, seminars given by outside scientists, etc.

This variety of situations will help students to build their knowledge in an iterative and progressive manner, while developing their autonomy, organizational skills, time management, and capacity to use various modes of communication, etc.

Evaluation

All learning activities are assessed as prescribed by the University internal regulations (see exam regulations), viz. written and oral exams, laboratory exams, individual or group work, public presentation of projects and final thesis.

Detailment assessment rules will be made clear by each individual instructor, at the first lecture.

Mobility and/or Internationalisation outlook

Global framework

The Faculty of Applied Sciences has taken part, since their inception, in all the various mobility programmes which have been set up at both the European and world levels.

The numerous contacts it has with professional circles, notably via its Advisory Board, have demonstrated to what extent employers are favourably impressed by a mobility experience in someone's CV. The ever-increasing internationalization of research via networks linking laboratories throughout the world, speaks in favour of encouraging this mobility.

Students' interest is aroused at the end of their Bachelor studies, notably via intensive courses such as those of the ATHENS () or BEST () networks.

In the course of the two-year Master's programme, students are encouraged to take part in a 1- or 2-semester exchange scheme

Within Belgium, the Faculty of Applied Sciences is involved in a privileged partnership with the Faculteit Ingenieurswetenschappen of the Katholieke Universiteit Leuven, with whom it has set up an exchange scheme relating to the first year of the Master's curriculum (<https://eng.kuleuven.be/>).

At the European level, the Faculty of Applied Sciences is strongly involved in the CLUSTER excellence network (). This network encourages internal mobility, since this is a guarantee of quality as concerns both the level of teaching and the hosting of exchange students. Moreover, Cluster partners have signed an agreement recognizing each other's Bachelor's curricula. This agreement stipulates that all Bachelors of network institutions will have access to the Master's studies in any institution on a par with local students.

Outside Europe, the Faculty of Applied Sciences is a partner in the Magalhaes network, which groups about fifteen European universities together with the best South American science and technology universities (<https://www.magalhaes-network.net/>).

Besides these network partnerships, the Faculty has also signed a number of individual agreements with various universities in Europe, North America or elsewhere in the world. A list of these agreements may be found on the website of UCL International Relations (<https://www.uclouvain.be/international.html>).

UCL is also a partner in the TIME programme () which gives students the opportunity to obtain two engineering degrees, via a specifically tailored curriculum.

Specific features of the KIMA Master's:

The Master's in chemistry and materials science engineering features two international openings, allowing a student to very easily pursue studies abroad, while ensuring a high-quality curriculum in chemistry and materials science. The integration of the Master's into these international programmes requires that some courses be taught in English. This is why, the default situation is that all first semester MAPR courses are taught in English, unless all attendees decide otherwise at the outset, out of respect for non-French speaking participants. However, all second semester MAPR courses are taught in French, unless all attendees decide otherwise at the outset.

Within the first international opening, organized by the European FAME excellence network, the student will choose a first year of Master studies in materials science either at the University of Augsburg, or at the Institut National Polytechnique de Grenoble (all courses taught in English). The student may apply for an Erasmus grant to finance mobility during that first year. It will then be back to UCL for the second year, with the possibility of carrying out part of the final thesis at one of the partner universities (Augsburg, Grenoble, Bordeaux, Darmstadt, Aveiro, Liège, UCL). After successful completion of the curriculum, the student will be awarded a degree in chemical and materials science engineering from UCL, and also a "Master 2R Science et Génie des Matériaux" (Grenoble) or "Master in Advanced Materials Science" (Augsburg), grouped under the common title "International Master in Functional Advanced Materials and Engineering". Additional information may be found on <https://www.fame-master.com/>

As for the second international opening, the student will complete the last year within the framework of the European Master's in Rheology. This training comprises compulsory courses as well as group activities, on the campus of the coordinating university (Minho, Portugal) and advanced elective courses on a remote basis. The final thesis will be conducted at one of the partner universities . After successful completion of the curriculum, the student will be awarded a KIMA Master's degree from UCL, and also a European diploma in Rheology.

- International possibilities (for UCL students)

Besides intensive courses which are one component of international relations, EPL students with outstanding results are encouraged to apply for 5- or 10-month exchange programmes.

When taking place during the first Master's year, exchanges are generally 10 months long. In the second year, they only last for a semester, either as courses or else research in a foreign laboratory as a complement to the final thesis.

Some other more specific exchange programmes have been set up with South America, where the academic year is naturally on an "austral" basis.

Students are informed about the various exchange programmes as from their second Bachelor's year. They are encouraged to prepare for their exchange in a timely manner, notably by taking language courses at the Modern Languages Institute of UCL.

- International appeal (for non-résidents)

As described below, the University of Louvain (UCL) has developed a long-standing experience of greeting foreign students within the framework of international or exchange programmes. The "Master in Chemical and Materials Engineering" fits within this general tradition, and offers the student a top-notch programme in Chemical Engineering and Materials Science, encompassing a wide field of scientific activities in Applied Physics and Chemistry. Admission requires approval by the Committee for Engineering Studies in Chemistry and Physics, on the basis of a comprehensive résumé submitted by the student pursuant to the general regulations of the University of Louvain published on www.uclouvain.be.

To facilitate the integration of foreign students, courses are given in English during the first and third semesters of the Master's (this rule may be relaxed for some courses at the onset of the semester, if so decided by ALL participating students). This allows non-French-speaking students to begin their Master's studies under the best conditions, while upgrading their knowledge of French by following French-as-a-Foreign-Language classes (see below) or by immersion into the student life of Louvain-la-Neuve. However, the courses of the second and fourth semesters are given in French (unless decided otherwise by all participating students), which provides foreign students with a unique opportunity to master French, one of the important official languages of the European Union.

The curriculum consists of a large number of elective courses which allow students to set up a customized programme based on their previous learning experience, and comprises an optional traineeship in industry, 30 credits of work in research laboratories, and projects giving a more practical bent to the training. The instructors of the Master's in Chemical and Materials Science Engineering are recognized scientists, with track records of excellence in applied chemistry and physics, as testified by their integration into European networks of excellence (FAME, NANOBEAMS, NANOQUANTA), their participation in international research programmes, their numerous contracts with European industrial companies, and their large number of publications in high ranking scientific journals including Nature, Science, Nature Materials, Physical Review Letters, Journal of the American Chemical Society, Nano Letters, etc. This not only ensures that the most recent scientific advances in the fields of chemistry and physics are passed on to the students, but also that students are introduced to typical industrial concerns, issues and recent developments.

The programme can also be taken as part of the International Master's in Functional Advanced Materials and Engineering which is currently being considered for support within the Erasmus Mundus frame. In addition, the final year of the Master's may be super-

imposed on the second year of the European Master's in Rheology. Ask for updated information on these possibilities from the person in charge of the programme at Louvain.

Services offered by the University to foreign students

About 1000 European and third-country students are welcomed each year in Louvain-la-Neuve, amounting to almost 19% of Louvain's students. A series of administrative units from Schools and University Central Services are responsible for foreign students. These units benefit from support from the International Relations Office (Administration des relations internationales, ADRI) for the follow-up of application files and for grant management. The University web site provides answers to frequently asked questions about housing, admission, rules, curricula and names of responsible officers or Faculty members.

Arriving visiting students may obtain useful information by reading the "Guide for the visiting exchange student" published on the web site of ADRI (<https://www.uclouvain.be/en-etudiantinternational.html>). This comprehensive guide, which is regularly updated and available in French and English, provides information on practical issues such as housing, language courses, admission and registration, student assistance, cost of living, student clubs, health insurance, University structure, etc. In addition, the registration service of UCL sends to registered students, well before their arrival in Belgium, all the paperwork needed to obtain a visa, apply for housing, and solve specific legal issues.

Once arrived in Belgium, and upon final registration, students also receive a copy of the "Guide pratique de l'étudiant", which lists useful addresses and links for residents of Louvain-la-Neuve. Finally, the Student Assistance Service provides help to students in need of social, medical, financial or cultural assistance.

The campus of Louvain-la-Neuve benefits from numerous extra-curricular activities organized by student societies. Some students elect to live in community apartments (or "community-kots") devoted to the development of specific projects (in culture, sports, politics, etc.). A few of these "community-kots" are dedicated to helping foreign students to socialize in Louvain-la-Neuve. Furthermore, disabled persons benefit from special support from the University and specialized "community-kots", and the whole campus is wheelchair-friendly.

Numerous computer rooms and libraries are available to registered students. Free language classes are provided by the ILV (Institut des Langues Vivantes) during the course semesters; alternatively, students may pay to access language classes organized during the course semesters or holiday periods by the independent CLL (Centre de langues de Louvain-la-Neuve). Fee reductions are available for Erasmus Mundus students. A few "community-kots" also propose language support and discussion panels. Finally, classes of French as a Foreign Language (FFL) are organized by the ILV and are freely accessible to students who take these classes as part of their curriculum.

- Partner programmes

- With European institutions

International Master 's in "Functional Advanced Materials and Engineering" (FAME) (120 credits)

One of the openings of Master's in Chemical and Materials Science engineering is the International Master 's in "Functional Advanced Materials and Engineering", set up by seven partner universities within the framework of the FAME European excellence network, which was awarded the Erasmus Mundus label by the European Commission. Our wish is that the Authorities of UCL also award the label of UCL international Master's. Students making this choice will perform their first year of Master studies either at the University of Augsburg, or at the Institut National Polytechnique de Grenoble, and will then return to UCL for their second year. The final thesis will be carried out in collaboration with Louvain at one of the seven partner universities. Registration for this Master's is detailed in the appended Erasmus Mundus project. It is coordinated by INPG, and entails a slightly higher fee (1000 €/an).

- TIME programme with :

- Ecole Centrale Paris

- Supaero Toulouse

- Universidad Politecnica de Madrid

- Politecnico di Milano

- Politecnico di Torino

- The EPL has also signed a specific convention with the Institut Français du Pétrole (<https://www.ifp.fr/>) which allows the possibility of combining the second Master's year with the first year of the complementary programme at IFP.

Possible trainings at the end of the programme

Accessible complementary Master's degrees: Master's degrees in nanotechnology, polymers, nuclear engineering, biotechnology and applied biology, once they have been set up, will be natural extensions of the curriculum.

Accessible Ph. D. curricula : by virtue of its training towards and via research, the Master's in chemical and materials science engineering gives its students an excellent preparation towards Ph. D. studies. Instructors involved in the Master's are members of the CHIM ("molecular, supramolecular and functional chemistry ") and MAIN ("materials, interfaces and nanotechnology"), doctoral schools, which are there to welcome students who wish to further their studies via a Ph. D.

KIMA2M - Contacts

Curriculum Managment

Entite de la structure FYKI

| | |
|-------------------------|---|
| Acronyme | FYKI |
| Dénomination | Commission de programme - Ingénieur civil en chimie et sciences des matériaux et ingénieur civil physicien |
| Adresse | Place Sainte Barbe, 2 bte L5.02.02 1348 Louvain-la-Neuve Tél 010 47 24 87 - Fax 010 47 40 28 |
| Secteur | Secteur des sciences et technologies (SST) |
| Faculté | Ecole Polytechnique de Louvain (EPL) |
| Commission de programme | Commission de programme - Ingénieur civil en chimie et sciences des matériaux et ingénieur civil physicien (FYKI) |

Academic Supervisor : [Christian BAILLY](#)

Jury

Président du Jury : **Piotr SOBIESKI**

Secrétaire du Jury : **Sophie DEMOUSTIER**

Usefull Contacts

Secrétariat : **Viviane ABEELS**

KIMA2M - Detailed programme

Programme structure

The Master's curriculum in chemical and materials science engineering will consist of at least 120 credits covering two years, with a minimum of 60 credits per year, and comprising :

- a core curriculum of at least 30 credits, including a final thesis and general interest electives;
- a 30-credit specialization;
- at least one option totalling at least 20 credits, to be chosen from amongst the following: chemical engineering, environment and sustainable development, inorganic materials and processes, polymers and macromolecules, mechanics of materials or nanotechnology;
- specialized elective courses, or one or more additional options (each totalling at least 20 credits, except for the management option) chosen from amongst the 10 options of the curriculum (chemical engineering, environment and sustainable development, inorganic materials and processes, polymers and macromolecules, mechanics of materials, nanotechnology, biomaterials and bioprocesses, optics, management or launching of small and medium-sized companies).

The final thesis is generally written during the last year. However, students may choose to take any given course in the first or second year, subject to possible prerequisites. This will be the case in particular for students pursuing part of their education abroad.

If, in the course of his (her) former curriculum, a student has already been credited with a subject included in the compulsory core curriculum, or any training deemed equivalent, this subject will be replaced by elective courses, while conforming to imposed constraints. The student is responsible for checking whether the minimum total number of credits has been reached, as well as those of the specialized field, which will appear on the final diploma.

The student's curriculum will be submitted for acceptance by the Applied physics and chemistry diploma committee, using an ad hoc form to be found on the website of the committee.

Whatever the focus or the options chosen, the programme of this master shall totalize 120 credits, spread over two years of studies each of 60 credits.

Core study

- > [Tronc commun du master ingénieur civil en chimie et science des matériaux](#) [en-prog-2013-kima2m-lkima220t.html]

> Professional focus [en-prog-2013-kima2m-lkima200s]

Options courses

- > [Option en génie chimique](#) [en-prog-2013-kima2m-lkima220o.html]
- > [Option en environnement et développement durable](#) [en-prog-2013-kima2m-lkima221o.html]
- > [Option en matériaux et procédés inorganiques](#) [en-prog-2013-kima2m-lkima222o.html]
- > [Option en polymères et macromolécules](#) [en-prog-2013-kima2m-lkima223o.html]
- > [Option en mécanique des matériaux](#) [en-prog-2013-kima2m-lkima224o.html]
- > [Option en biomatériaux et bioprocédés](#) [en-prog-2013-kima2m-lkima225o.html]
- > [Option en nanotechnologie](#) [en-prog-2013-kima2m-lkima233o.html]
- > [Option en technologies photovoltaïques](#) [en-prog-2013-kima2m-lkima235o.html]
- > [Business risks and opportunities](#) [en-prog-2013-kima2m-lkima231o.html]
- > [Option en création de petites et moyennes entreprises](#) [en-prog-2013-kima2m-lkima230o.html]
- > [Cours au choix](#) [en-prog-2013-kima2m-lkima234o.html]

Programme by subject

Core courses

- Mandatory
 Courses not taught during 2013-2014
 Periodic courses taught during 2013-2014
- Optional
 Periodic courses not taught during 2013-2014
 Two years course

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

| | | | | | | Year | |
|---------------------------------|---|----|--|------------|--|------|---|
| | | | | | | 1 | 2 |
| <input type="radio"/> LKIMA2990 | Travail de fin d'études | N. | | 28 Credits | | | x |

Religion courses for student in exact sciences

The student shall select 2 credits from amongst

The student shall select

| | | | | | | | |
|---------------------------------|--|-----------------------------------|-----|-----------|----|---|---|
| <input type="radio"/> LTECO2100 | Questions of religious sciences: biblical readings | Hans Ausloos | 15h | 2 Credits | 1q | x | x |
| <input type="radio"/> LTECO2200 | Questions of religious sciences: reflections about christian faith | Dominique Martens | 15h | 2 Credits | 2q | x | x |
| <input type="radio"/> LTECO2300 | Questions of religious sciences: questions about ethics | Philippe Cochiaux | 15h | 2 Credits | 1q | x | x |

Professional focus [30.0]

- Mandatory
 Courses not taught during 2013-2014
 Periodic courses taught during 2013-2014
- Optional
 Periodic courses not taught during 2013-2014
 Two years course

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

| | | | | | | Year | |
|---------------------------------|--|---|--------------|-----------|----|------|---|
| | | | | | | 1 | 2 |
| <input type="radio"/> LMAPR2011 | Methods of Physical and Chemical Analysis | Arnaud Delcorte, Jacques Devaux | 30h+30h | 5 Credits | 1q | x | |
| <input type="radio"/> LMAPR2013 | Physical Chemistry for Metals and Ceramics | Pascal Jacques | 30h+30h | 5 Credits | 1q | x | |
| <input type="radio"/> LMAPR2014 | Physics of Functional Materials | Xavier Gonze, Luc Piraux, Gian-Marco Rignanese (coord.) | 37.5h +22.5h | 5 Credits | 1q | x | |
| <input type="radio"/> LMAPR2019 | Polymer Science and Engineering | Sophie Demoustier, Alain Jonas, Evelyne Van Ruymbeke | 45h+15h | 5 Credits | 1q | x | |
| <input type="radio"/> LMAPR2330 | Reactor Design | Juray De Wilde | 30h+30h | 5 Credits | 1q | x | |
| <input type="radio"/> LMAPR2481 | Deformation and fracture of materials | Francis Delannay, Thomas Pardoën | 30h+30h | 5 Credits | 1q | x | |

Options

L'étudiant sélectionne au moins une option parmi : génie chimique, environnement et développement durable, matériaux et procédés inorganiques, polymères et macro-molécules, mécanique des matériaux, nano-technologie.

- > [Option en génie chimique](#) [en-prog-2013-kima2m-lkima220o]
- > [Option en environnement et développement durable](#) [en-prog-2013-kima2m-lkima221o]
- > [Option en matériaux et procédés inorganiques](#) [en-prog-2013-kima2m-lkima222o]
- > [Option en polymères et macromolécules](#) [en-prog-2013-kima2m-lkima223o]
- > [Option en mécanique des matériaux](#) [en-prog-2013-kima2m-lkima224o]
- > [Option en biomatériaux et bioprocédés](#) [en-prog-2013-kima2m-lkima225o]
- > [Option en nanotechnologie](#) [en-prog-2013-kima2m-lkima233o]
- > [Option en technologies photovoltaïques](#) [en-prog-2013-kima2m-lkima235o]
- > [Business risks and opportunities](#) [en-prog-2013-kima2m-lkima231o]
- > [Option en création de petites et moyennes entreprises](#) [en-prog-2013-kima2m-lkima230o]
- > [Cours au choix](#) [en-prog-2013-kima2m-lkima234o]

OPTION EN GÉNIE CHIMIQUE

L'objectif de cette option est de former l'étudiant aux concepts clés de ce domaine, entre autres la conception, la régulation, l'automatisation, la maintenance, la simulation et le développement de procédés chimiques ou biochimiques industriels.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊙ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 credits parmi

Year

1 2

● Cours obligatoires (20 credits)

| Course ID | Course Title | Instructor | Hours | Credits | Year 1 | Year 2 |
|-------------|---|--------------------------------------|------------|-----------|--------|--------|
| ● LMAPR2118 | Fluid-fluid separations | Patricia Luis Alconero, Denis Mignon | 30h +22.5h | 5 Credits | 2q | x x |
| ● LMAPR2380 | Solid-fluid separation | Pierre Adam, Denis Mignon | 30h +22.5h | 5 Credits | 1q | x x |
| ● LMAPR2430 | Inorganic industrial chemical processes | Juray De Wilde | 30h +22.5h | 5 Credits | 2q | x x |
| ● LINMA2300 | Process Control | Denis Dochain | 30h+30h | 5 Credits | 1q | x x |

⊗ Cours particulièrement recommandés

| | | | | | | |
|-------------|---|--|------------|-----------|----|-----|
| ⊗ LMAPR2320 | Process development in industrial organic chemistry | Juray De Wilde (coord.), Patricia Luis Alconero | 30h+15h | 5 Credits | 1q | x x |
| ⊗ LMAPR2141 | Metals Processing and Recycling | Joris Proost | 30h+30h | 5 Credits | 2q | x x |
| ⊗ LINMA1702 | Applied mathematics : Optimization I | Vincent Blondel, François Glineur (compensates Vincent Blondel), François Glineur (coord.) | 30h +22.5h | 5 Credits | 2q | x x |
| ⊗ LBIRC2106 | Chemometrics | Bernadette Govaerts | 22.5h +15h | 3 Credits | 1q | x x |

Year

1 2

⌘ *Autres cours d'intérêt*

| | | | | | | | |
|-------------|---|--|----------------|-----------|----|---|---|
| ⌘ LSTAT2320 | Design of experiment. | Patrick Bogaert, Bernadette Govaerts | 22.5h +7.5h | 5 Credits | 2q | x | x |
| ⌘ LINMA2370 | Modelling and analysis of dynamical systems | Jean-Charles Delvenne, Denis Dochain (coord.) | 30h +22.5h | 5 Credits | 1q | x | x |
| ⌘ LINMA2671 | Automatic : Theory and implementation | Julien Hendrickx | 30h+30h | 5 Credits | 1q | x | x |
| ⌘ LMECA1120 | Introduction to finite element methods. | Vincent Legat | 30h+30h | 5 Credits | 2q | x | x |
| ⌘ LBIRC2108 | Biochemical and Microbial Engineering | Spyridon Agathos | 30h +22.5h | 5 Credits | 2q | x | x |

OPTION EN ENVIRONNEMENT ET DÉVELOPPEMENT DURABLE

L'objectif de cette option est de permettre à l'étudiant de maîtriser les principales méthodes de traitement et de recyclage des résidus et effluents industriels, et de sélectionner les matériaux et procédés à utiliser pour une application donnée en prenant en compte les exigences du développement durable (coût écologique intégré de la production au recyclage, durabilité, etc.).

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 29 credits parmi

Year

1 2

o Cours obligatoires

L'étudiant choisit obligatoirement au moins deux parmi les trois cours suivants

| | | | | | | | |
|-------------|--|---------------------------------------|----------|-----------|----|---|---|
| ⊗ LMAPR2643 | Treatment of liquid effluents | Spyridon Agathos, Léon Duviuier | 30h+7.5h | 4 Credits | 1q | x | x |
| ⊗ LMAPR2680 | Treatments of gaseous wastes | Jacques Devaux, Olivier Françoisse | 30h+7.5h | 4 Credits | 1q | x | x |
| ⊗ LMAPR2690 | Valorisation and Treatment of Solid Wastes | Jacques Devaux, Joris Proost | 30h+7.5h | 4 Credits | 1q | x | x |

⊗ Cours au choix

| | | | | | | | |
|-------------|--|--|---------------|-----------|----|---|---|
| ⊗ LMAPR2020 | Materials Selection | Christian Bailly, Thomas Pardoën | 30h +22.5h | 5 Credits | 2q | x | x |
| ⊗ LMAPR2510 | Mathematical ecology | Eric Deleersnijder, Emmanuel Hanert | 30h +22.5h | 5 Credits | 2q | x | x |
| ⊗ LMECA2645 | Major technological hazards in industrial activity. | Denis Dochain, Alexis Dutrieux | 30h | 3 Credits | 2q | x | x |
| ⊗ LFSA2245 | Environment and Enterprise | Thierry Bréchet | 30h | 3 Credits | 1q | x | x |
| ⊗ LAUCE2192 | Gestion des choix technologiques | N. | 20h | 2 Credits | 1q | △ | x |
| ⊗ LENVI2007 | Renewable energies | André De Herde, Xavier Draye, Patrick Gerin (coord.), Hervé Jeanmart | 30h | 4 Credits | 1q | x | x |
| ⊗ LENVI2101 | Sociétés, populations, environnement, développement: problématiques et approches interdisciplinaires | Denis Dochain, Bernard Feltz, Pierre-Joseph Laurent, Jean-Pascal van Ypersele de Strihou (coord.) | 45h | 9 Credits | 1q | x | x |

OPTION EN MATÉRIAUX ET PROCÉDÉS INORGANIQUES

L'objectif de cette option est de développer chez l'étudiant une connaissance approfondie des méthodes de synthèse, de mise en oeuvre et de recyclage des matériaux inorganiques (métaux, céramiques et matériaux frittés, verres inorganiques), de leurs propriétés structurales et fonctionnelles, des détails de leur microstructure à différentes échelles, et des relations entre leurs propriétés et leurs méthodes d'élaboration.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊙ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 credits parmi

Year

1 2

○ Cours obligatoires

| | | | | | | | |
|-------------|---|---------------------------------|---------|-----------|----|---|---|
| ● LMAPR2141 | Metals Processing and Recycling | Joris Proost | 30h+30h | 5 Credits | 2q | x | x |
| ● LMAPR2642 | Characterisation of Inorganic Materials | Pascal Jacques, Joris Proost | 30h+30h | 5 Credits | 1q | x | x |

⊗ Thermodynamique et procédés d'élaboration

| | | | | | | | |
|-------------|--|---|---------------|-----------|------|---|---|
| ⊗ LMAPR2430 | Inorganic industrial chemical processes | Juray De Wilde | 30h +22.5h | 5 Credits | 2q | x | x |
| ⊗ LMAPR2672 | Processing of ceramics, powder metallurgy and surface treatments | Francis Delannay, Jean-Pierre Erauw, Joris Proost | 30h+30h | 5 Credits | 2q ⊙ | x | x |
| ⊗ LKULH2013 | Phase equilibria in inorganic materials and processes | N. | | 5 Credits | | x | x |

⊗ Mise en oeuvre et durabilité

| | | | | | | | |
|-------------|--|---|---------------|-----------|------|---|---|
| ⊗ LMAPR2420 | Complements of physical metallurgy | Pascal Jacques (coord.), Thomas Pardoën | 30h+30h | 5 Credits | 2q ⊕ | x | x |
| ⊗ LMAPR2482 | Plasticity and metal forming | Laurent Delannay, Thomas Pardoën (coord.) | 30h +22.5h | 5 Credits | 2q | x | x |

OPTION EN POLYMÈRES ET MACROMOLÉCULES

L'objectif de cette option est de permettre à l'étudiant de maîtriser les relations entre la structure chimique des macromolécules organiques (polymères, bio-macromolécules, etc.), la microstructure des matériaux qui en dérivent, les principales méthodes de synthèse et de mise en oeuvre, et les propriétés structurales et fonctionnelles qui en découlent, aussi bien au niveau macroscopique et industriel qu'au niveau des applications dans le domaine de la nanotechnologie.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊙ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 28 credits parmi

Year

1 2

○ Cours obligatoire

| | | | | | | | |
|-------------|--|--|--------|-----------|----|---|---|
| ● LMAPR2016 | Project in Polymer Science | Charles-André Fustin, Alain Jonas | 0h+45h | 5 Credits | 2q | x | x |
|-------------|--|--|--------|-----------|----|---|---|

⊗ Compléments de science des polymères

| | | | | | | | |
|------------|---|---|---------|-----------|--|---|---|
| ⊗ LCHM2261 | Polymer Chemistry and Physico-Chemistry | Charles-André Fustin, Jean-François Gohy, Alain Jonas | 45h+15h | 5 Credits | | x | x |
|------------|---|---|---------|-----------|--|---|---|

⊗ Bio- et nano-technologie macromoléculaires

| | | | | | | | |
|-------------|--|---|----------------|-----------|----|---|---|
| ⊗ LMAPR2012 | Macromolecular Nanotechnology | Sophie Demoustier, Karine Glinel, Jean-François Gohy, Bernard Nysten | 45h+15h | 5 Credits | 2q | x | x |
| ⊗ LCHM2170 | Introduction to protein biotechnology | Pierre Morsomme, Patrice Soumillion | 22.5h +7.5h | 3 Credits | | x | x |
| ⊗ LFUND2908 | Théorie quantique de l'état solide organique | N. | | 3 Credits | | x | x |

⊗ Ingénierie des matériaux polymères

| | | | | | | | |
|-------------|--|---|---------------|-----------|----|---|---|
| ⊗ LMAPR2010 | Polymer Materials | Christian Bailly, Bernard Nysten | 45h+15h | 5 Credits | 1q | x | x |
| ⊗ LMAPR2018 | Rheometry and Polymer Processing | Christian Bailly, Evelyne Van Ruymbeke | 30h +22.5h | 5 Credits | 2q | x | x |

OPTION EN MÉCANIQUE DES MATÉRIAUX

L'objectif de cette option est d'initier l'étudiant aux principales caractéristiques mécaniques des diverses classes de matériaux, aux conséquences de ces propriétés sur leur mise en oeuvre et leur usage, aux méthodes de simulation de ces propriétés, et aux critères permettant de sélectionner un matériau pour une application donnée.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 credits parmi

Year

1 2

○ Cours obligatoires

| | | | | | | | |
|-------------|--|---|------------|-----------|----|---|---|
| ● LMAPR2018 | Rheometry and Polymer Processing | Christian Bailly, Evelyne Van Ruymbeke | 30h +22.5h | 5 Credits | 2q | x | x |
| ● LMAPR2020 | Materials Selection | Christian Bailly, Thomas Pardoën | 30h +22.5h | 5 Credits | 2q | x | x |
| ● LMAPR2482 | Plasticity and metal forming | Laurent Delannay, Thomas Pardoën (coord.) | 30h +22.5h | 5 Credits | 2q | x | x |

⊗ Matériaux composites

| | | | | | | | |
|-------------|---|---|---------|-----------|----|---|---|
| ⊗ LMECA2640 | Mechanics of composite materials. | Issam Doghri, Frédéric Lani | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LMECA2141 | Rheology. | Christian Bailly, Vincent Legat | 30h+30h | 5 Credits | 1q | x | x |

⊗ Mécanique du solide et méthodes numériques

| | | | | | | | |
|-------------|--|--------------------------------|---------|-----------|----|---|---|
| ⊗ LMECA1120 | Introduction to finite element methods. | Vincent Legat | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LMECA2131 | Introduction to nonlinear solid mechanics. | Issam Doghri | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LAUCE1181 | Mechanics of structures | Pierre Latteur | 30h+30h | 2 Credits | 1q | x | x |
| ⊗ LMECA2520 | Calcul de structures planes | Issam Doghri | 30h+30h | 5 Credits | 1q | x | x |

⊗ Métallurgie mécanique

| | | | | | | | |
|-------------|--|---|---------|-----------|------|---|---|
| ⊗ LMECA2860 | Welding. | Bruno de Meester de Betzenbroeck | 30h+30h | 5 Credits | 1q | x | x |
| ⊗ LMAPR2420 | Complements of physical metallurgy | Pascal Jacques (coord.), Thomas Pardoën | 30h+30h | 5 Credits | 2q ⊕ | x | x |

OPTION EN BIOMATÉRIAUX ET BIOPROCÉDÉS

L'objectif de cette option est de donner à l'étudiant une ouverture sur les principaux concepts biochimiques et biologiques utiles pour développer des applications dans le domaine des biomatériaux, des biocapteurs et des bioprocédés.

○ Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 credits parmi

Year

1 2

○ Cours obligatoires

| | | | | | | | |
|-------------|---|---|---------|-----------|----|---|---|
| ○ LBIR1321 | Biochemistry II : metabolic pathways and their regulation | Michel Ghislain (coord.), Yvan Larondelle | 30h+15h | 3 Credits | 1q | x | x |
| ○ LBIR1220 | Biochemistry I | Michel Ghislain, Yvan Larondelle (coord.) | 30h+15h | 4 Credits | 2q | x | x |
| ○ LGBIO2030 | Biomaterials | Sophie Demoustier, Christine Dupont, Gaëtane Leloup | 30h+30h | 5 Credits | 1q | x | x |

⊗ Cours au choix

| | | | | | | | |
|--------------|---|---|-----------------|-----------|----|---|---|
| ⊗ LCHM2170 | Introduction to protein biotechnology | Pierre Morsomme, Patrice Soumillion | 22.5h +7.5h | 3 Credits | | x | x |
| ⊗ LBIO1321 | Molecular genetics | Bernard Hallet | 35h+10h | 4 Credits | 1q | x | x |
| ⊗ LBRMC2101 | Genetic engineering | Marc Boutry | 30h+7.5h | 3 Credits | 1q | x | x |
| ⊗ LBIO1335 | Immunology | Jean-Paul Dehoux | 25h+15h | 3 Credits | 1q | x | x |
| ⊗ LMAPR2012 | Macromolecular Nanotechnology | Sophie Demoustier, Karine Glinel, Jean-François Gohy, Bernard Nysten | 45h+15h | 5 Credits | 2q | x | x |
| ⊗ LELEC2560 | Micro and nanofabrication techniques | Vincent Bayot, Laurent Francis, Benoît Hackens, Jean-Pierre Raskin | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LBIRC2108 | Biochemical and Microbial Engineering | Spyridon Agathos | 30h +22.5h | 5 Credits | 2q | x | x |
| ⊗ LFSAB1225 | Introduction to biomedical engineering | Philippe Lefèvre | 45h | 4 Credits | 2q | x | x |
| ⊗ LGBIO2020 | Bioinstrumentation | André Mouraux, Michel Verleysen | 30h+30h | 5 Credits | 1q | x | x |
| ⊗ LGBIO2070 | Artificial organs and rehabilitation | Luc-Marie Jacquet, Philippe Lefèvre, Renaud Ronsse | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LBIRC2101A | Analyse biochimique et notions de génie génétique: analyse biochimique | Marc Boutry, François Chaumont, Pierre Morsomme | 18.5h +22.5h | 4 Credits | 1q | x | x |
| ⊗ LBIRC2101B | Analyse biochimique et notions de génie génétique: Notions de génie génétique | Marc Boutry, François Chaumont, Pierre Morsomme | 18.5h +22.5h | 4 Credits | 1q | x | x |

OPTION EN NANOTECHNOLOGIE

Commune aux masters ingénieur civil électricien, électromécanicien, physicien, en chimie et science des matériaux, cette option a pour objectif d'introduire l'étudiant à la physique et à la simulation des matériaux et des dispositifs utilisés dans le domaine de la micro- et de la nano-électronique, aux propriétés et aux méthodes de fabrication et de caractérisation des micro- et nano-structures, aux modes de fonctionnement des nano-dispositifs, ainsi qu'au développement et à l'intégration d'éléments (bio-) organiques dans les nano-systèmes.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊙ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 credits parmi

Year

1 2

⊗ Physique des nano-structures et nano-matériaux

Pour participer aux cours proposés dans cette rubrique, il est recommandé d'avoir déjà suivi au préalable un cours de Physique des Matériaux, comme par exemple le cours MAPR 1492. Les cours MAPR 2451 et 2471 ne sont pas accessibles aux étudiants du master ingénieur civil physicien.

| | | | | | | | |
|-------------|--|--|-----------------|-----------|----|---|---|
| ⊗ LMAPR2015 | Physics of Nanostructures | Jean-Christophe Charlier, Xavier Gonze, Luc Piraux | 37.5h +22.5h | 5 Credits | 1q | x | x |
| ⊗ LMAPR2451 | Study of materials at the atomic scale | Jean-Christophe Charlier, Xavier Gonze, Gian-Marco Rignanese | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LMAPR2471 | Transport phenomena in solids and nanostructures | Jean-Christophe Charlier, Luc Piraux (coord.) | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LPHY2273 | Cryophysique et questions spéciales de supraconductivité | Vincent Bayot, Luc Piraux (coord.) | 45h+15h | 5 Credits | 1q | x | x |
| ⊗ LFUND2908 | Théorie quantique de l'état solide organique | N. | | 3 Credits | | x | x |

⊗ Nano- et micro-dispositifs semi-conducteurs

Pour participer aux cours proposés dans cette rubrique, il est recommandé d'avoir déjà suivi au préalable un cours d'électronique physique ou de dispositifs semiconducteurs, comme par exemple un des cours ELEC 1330 ou ELEC 1755.

| | | | | | | | |
|-------------|-----------------------------|--|---------|-----------|----|---|---|
| ⊗ LELEC2541 | Advanced electronic devices | Vincent Bayot (coord.), Denis Flandre, Jean-Pierre Raskin | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LELEC2550 | Special electronic devices | Vincent Bayot (coord.), Denis Flandre, Laurent Francis, Jean-Pierre Raskin | 30h+30h | 5 Credits | 1q | x | x |
| ⊗ LELEC2710 | NANOELECTRONICS | Vincent Bayot (coord.), Denis Flandre, Laurent Francis, Jean-Pierre Raskin | 30h+30h | 5 Credits | 1q | x | x |

⊗ Micro- et nano-ingénierie

| | | | | | | | |
|-------------|--------------------------------------|---|---------------|-----------|----|---|---|
| ⊗ LELEC2560 | Micro and nanofabrication techniques | Vincent Bayot, Laurent Francis, Benoît Hackens, Jean-Pierre Raskin | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LELEC2895 | Design of micro and nanosystems | Denis Flandre, Laurent Francis (coord.), Thomas Pardoën, Jean-Pierre Raskin | 30h+30h | 5 Credits | 1q | x | x |
| ⊗ LMAPR2012 | Macromolecular Nanotechnology | Sophie Demoustier, Karine Glinel, Jean-François Gohy, Bernard Nysten | 45h+15h | 5 Credits | 2q | x | x |
| ⊗ LMAPR2631 | Solid surface analysis and treatment | Arnaud Delcorte, Bernard Nysten | 37.5h +15h | 5 Credits | 2q | x | x |

OPTION EN TECHNOLOGIES PHOTOVOLTAÏQUES

Cette option couvre une thématique de grande importance sociétale et industrielle. Elle est commune aux étudiants des Masters ELEC, KIMA et FYAP. A partir de connaissances de base préalables en électronique physique, l'option vise d'abord la maîtrise du fonctionnement interne des cellules photovoltaïques, et est ensuite une extension par des cours au choix, vers des aspects applicatifs ou de R&D avancée, concernant leur fabrication, les propriétés quantiques ou optiques, les matériaux en couches minces, la connexion au réseau...

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 30 crédits parmi

Year

1 2

○ Cours obligatoire de l'option en technologies photovoltaïques (5 crédits)

| | | | | | | | |
|-------------|--|---|---------|-----------|----|---|---|
| ● LELEC2550 | Special electronic devices | Vincent Bayot (coord.), Denis Flandre, Laurent Francis, Jean-Pierre Raskin | 30h+30h | 5 Credits | 1q | x | x |
|-------------|--|---|---------|-----------|----|---|---|

○ Cours au choix de l'option en technologies photovoltaïques

De 15 à 25 crédits parmi

⊗ Orientation cellules solaires

Les étudiants ne peuvent choisir simultanément les cours LELEC 2710 et LMAPR 2015

| | | | | | | | |
|-------------|--|---|-----------------|-----------|----|---|---|
| ⊗ LELEC2560 | Micro and nanofabrication techniques | Vincent Bayot, Laurent Francis, Benoît Hackens, Jean-Pierre Raskin | 30h+30h | 5 Credits | 2q | x | x |
| ⊗ LELEC2710 | NANO ELECTRONICS | Vincent Bayot (coord.), Denis Flandre, Laurent Francis, Jean-Pierre Raskin | 30h+30h | 5 Credits | 1q | x | x |
| ⊗ LMAPR2015 | Physics of Nanostructures | Jean- Christophe Charlier, Xavier Gonze, Luc Piroux | 37.5h +22.5h | 5 Credits | 1q | x | x |
| ⊗ LPHY2141 | Optique et lasers | Alain Cornet | 30h+10h | 5 Credits | 1q | x | x |

⊗ Orientation couches minces

| | | | | | | | |
|-------------|--|---|---------------|-----------|------|---|---|
| ⊗ LMAPR2020 | Materials Selection | Christian Bailly, Thomas Pardoën | 30h +22.5h | 5 Credits | 2q | x | x |
| ⊗ LMAPR2672 | Processing of ceramics, powder metallurgy and surface treatments | Francis Delannay, Jean-Pierre Erauw, Joris Proost | 30h+30h | 5 Credits | 2q ⊖ | x | x |
| ⊗ LPHY2246 | Basses pressions et physique du vide | Laurent Francis, Benoît Hackens | 30h | 5 Credits | 1q | x | x |

⊗ Orientation réseau électrique

| | | | | | | | |
|-------------|---|--|---------|-----------|----|---|---|
| ⊗ LELEC2595 | Power quality | Emmanuel De Jaeger | 30h+15h | 4 Credits | 2q | x | x |
| ⊗ LELEC2670 | Renewable and non conventional sources of electrical energy | Emmanuel De Jaeger, Pascal Jacques, Ernest Matagne | 30h+15h | 4 Credits | 2q | x | x |

BUSINESS RISKS AND OPPORTUNITIES

Commune à la plupart des masters ingénieur civil, cette option a pour objectif de familiariser l'étudiant avec les principes de base de la gestion des entreprises.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 16 à 20 credits parmi

| | | | | | | Year | |
|------------|--|---|---------|-----------|------|------|---|
| | | | | | | 1 | 2 |
| ⊗ LFSA2140 | Elements of law for industry and research | Fernand De Visscher, Werner Derijcke, Bénédicte Inghels | 30h | 3 Credits | 1q | x | x |
| ⊗ LFSA2230 | Introduction to management and to business economics | Benoît Gailly | 30h+15h | 4 Credits | 2q | x | x |
| ⊗ LFSA1290 | Introduction to financial and accounting management | Gerrit Sarens | 30h+15h | 4 Credits | 2q | x | x |
| ⊗ LFSA2202 | Ethics and ICT | Axel Gosseries, Olivier Pereira | 30h | 3 Credits | 2q | x | x |
| ⊗ LFSA2245 | Environment and Enterprise | Thierry Bréchet | 30h | 3 Credits | 1q | x | x |
| ⊗ LFSA2210 | Organisation and human resources | John Cultiaux | 30h | 3 Credits | 1+2q | x | x |

⊗ **Alternative to the "Business risks and opportunities" for computer science students**

Computer science students who have already followed various courses of this discipline during their Bachelor's curriculum can select between 16 and 20 credits in the program "mineure en gestion pour les sciences informatiques" <http://www.uclouvain.be/xprog-2013-min-lgesc100i>

OPTION EN CRÉATION DE PETITES ET MOYENNES ENTREPRISES

Commune à la plupart des masters ingénieur civil, cette option a pour objectif de familiariser l'étudiant ingénieur civil avec les spécificités des P.M.E., de l'entrepreneuriat et de la création afin de développer chez lui les aptitudes, connaissances et outils nécessaires à la création d'entreprise. L'accès en est réservé uniquement à un nombre restreint d'étudiants sélectionnés sur base d'un dossier de motivation et d'interviews individuelles.

Les dossiers de motivation pour cette filière doivent être introduits avant la rentrée académique de Master1 auprès du :

Secrétariat CPME – Place des Doyens 1
1348 Louvain-la-Neuve (tél 010/47 84 59).

Les étudiants sélectionnés remplaceront le mémoire prévu dans le tronc commun par un mémoire spécifique en création d'entreprise (nombre de crédits inchangé).

○ Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

De 20 à 25 credits parmi

Year

1 2

○ Compulsory courses

| | | | | | | | |
|-------------|---|------------------------------------|---------|-----------|----|---|---|
| ○ LCPME2001 | Entrepreneurship Theory (in French) | Frank Janssen | 30h+20h | 5 Credits | 1q | x | |
| ○ LCPME2003 | Business plan of the creation of a company (in French) | Frank Janssen | 30h+15h | 5 Credits | 2q | | x |
| ○ LCPME2002 | Managerial, legal and economic aspects of the creation of a company (in French) | Régis Coeurderoy, Yves De Cordt | 30h+15h | 5 Credits | 1q | x | x |
| ○ LCPME2004 | Advanced seminar on Entrepreneurship (in French) | Frank Janssen | 30h+15h | 5 Credits | 2q | x | x |

⊗ Prerequisite CPME course

Students who have not taken a management course within their former curriculum shall include LCPME2000 in their current curriculum.

| | | | | | | | |
|-------------|---|---|---------|-----------|------|---|--|
| ○ LCPME2000 | Venture creation financing and management I | Régis Coeurderoy, Olivier Giacomini (compensates Régis Coeurderoy), Paul Vanzeveren | 30h+15h | 5 Credits | 1+2q | x | |
|-------------|---|---|---------|-----------|------|---|--|

COURS AU CHOIX

L'étudiant complète son programme par des cours au choix. Ceux-ci sont sélectionnés librement parmi les programmes de sciences exactes ou médicales de l'UCL ou de la FTW/KULeuven, moyennant l'accord d'un conseiller membre de la commission de programmes en chimie et physique appliquées (FYKI). En particulier, les cours apparaissant dans les options du master ingénieur civil en chimie et science des matériaux sont aussi accessibles à titre de cours au choix. L'attention des étudiants est également particulièrement attirée sur les cours des masters ingénieur civil physicien, électricien, mécanicien ou en génie biomédical.

● Mandatory

△ Courses not taught during 2013-2014

⊕ Periodic courses taught during 2013-2014

⊗ Optional

⊖ Periodic courses not taught during 2013-2014

‡ Two years course

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

| | | | | | | Year | |
|------------|----------------|----------------|---------|-----------|----|------|---|
| | | | | | | 1 | 2 |
| ⊗ LFS2351A | Group dynamics | Piotr Sobieski | 15h+30h | 3 Credits | 1q | x | x |
| ⊗ LFS2351B | Group dynamics | Piotr Sobieski | 15h+30h | 3 Credits | 2q | x | x |

⊗ Company training periods

Students may include in their curriculum a company training period worth 10 credits. However, if this activity is related to their final thesis, they shall choose the 5-credit LFS2996 course.

Students may include in their curriculum a company training period worth 10 credits. However, if this activity is related to their final thesis, they shall choose the 5-credit FSA 2996 course.

| | | | | | | | |
|-----------|---------------------|----------------|-----|------------|--|---|---|
| ⊗ LFS2995 | Stage en entreprise | Claude Oestges | 30h | 10 Credits | | x | x |
| ⊗ LFS2996 | Stage en entreprise | Claude Oestges | | 5 Credits | | x | x |

⊗ Sciences humaines

L'étudiant peut choisir jusqu'à 6 crédits, à l'exception des étudiants ayant choisi une option en gestion ou en création des petites et moyennes entreprises.

⊗ Langues

L'étudiant peut choisir jusqu'à 3 crédits, à l'exception des étudiants ayant choisi une option en gestion ou en création des petites et moyennes entreprises.

⊗ Autres cours

L'étudiant sélectionne librement des cours parmi les programmes de sciences exactes ou médicales de l'UCL ou de la FTW/KULeuven. Les cours apparaissant dans les options de leur programme de master sont aussi accessibles à titre de cours au choix. L'attention des étudiants est également attirée sur les cours des masters ingénieur civil physicien, en chimie et science des matériaux, électricien, mécanicien ou en génie biomédical, et de la mineure en génie biomédical.

