The version you're consulting is not definitive. This programme still may change. The final version will be published on 1th June.

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In english
Dissertation/Graduation Project: YES - Internship: YES
Activities in other languages: YES
Activities on other sites: NO
Main study domain: Sciences de l'ingénieur et technologie
Organized by: Ecole Polytechnique de Louvain (EPL)
Programme acronym: gce2m - Francophone Certification Framework: 7

Table of contents

Introduction ................................................................................................................................ 2
Teaching profile ......................................................................................................................... 3
  - Learning outcomes ............................................................................................................. 3
  - Programme structure .......................................................................................................... 4
  - Detailed programme .......................................................................................................... 4
  - Programme by subject ...................................................................................................... 5
  - Course prerequisites ......................................................................................................... 15
  - The programme's courses and learning outcomes ........................................................... 15
Information ............................................................................................................................... 16
  - Admission ......................................................................................................................... 16
  - Teaching method ............................................................................................................. 18
  - Evaluation ....................................................................................................................... 18
  - Mobility and/or Internationalisation outlook ................................................................. 19
  - Possible trainings at the end of the programme ............................................................... 19
  - Contacts ......................................................................................................................... 19
Introduction

Upon completion of this Master's degree programme, students will have mastered the principles and mathematical methods central to civil and environmental engineering: construction, hydraulics, geotechnology, structures and materials. Moreover, this Master's degree programme provides a wide range of specialisations through elective courses in its main fields.

Your Profile

You

• Want to understand, model and master natural and built-up spaces while respecting sustainable development as well as design and create structures for a natural environment;
• Are looking for a degree programme that will prepare you to meet future technological challenges facing civil and environmental engineering in an ever changing European and global context;
• Want to develop your innovative spirit and self-initiative as well as develop the necessary tools to complete your projects.

Your Programme

This Master's degree offers:

• advanced training in geotechnology, hydraulics, structures and materials;
• knowledge about project procedures;
• experience in a company via a 2 month long internship;
• immersion in high-tech research laboratories;
• a large choice of elective courses;
• the possibility of completing part of your coursework or internship abroad (in Europe or elsewhere).
Learning outcomes

Civil engineers are expected to design and construct basic infrastructure for our everyday lives while at the same time respecting and improving the environment.

This Master’s degree programme aims to train experts in the field of civil and environmental engineering who will be able to take into account sustainable development, as well as the unique prototype scale of the projects and the complex natural world in which these projects take place.

The future civil engineer will acquire the necessary skills and knowledge to become:

- a professional engineer capable of integrating multiple fields of civil and environmental engineering
- a practical engineer who can use his/her knowledge for solving real-world problems and use appropriate civil engineering tools and techniques, either on construction sites or in design offices
- a specialist in cutting edge methods used in civil and environmental engineering: construction, hydraulics, geotechnology, structures, materials and environment
- a manager capable of supervising projects alone or contributing as part of a team

The multidisciplinary training offered by the Louvain School of Engineering (EPL) emphasises a combination of theory and practice as well as analysis, design, manufacturing, production, research and development and innovation while never losing sight of issues related 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 and skills in basic and engineering science that allows them to solve relevant problems
   1.1 Identify and use biomedical engineering concepts, laws and reasoning to solve problems related to civil and environmental engineering:
       • Structures: design and calculation (cement, metal, wood, composite materials)
       • Geotechnology: soil mechanics, foundations, subterranean drainage
       • Hydraulic loads and open channel flow
       • Infrastructure projects (bridges, dams, roads, tunnels)
   1.2 Identify and use the modelling and calculation tools necessary to solve problems in the fields mentioned above

2. Organise and carry out an engineering procedure in order to meet a specific need or solve a particular problem
   2.1 Analyse all aspects of a problem, sort through available information, identify limits (rules, technical, security, budgetary, human, environmental, etc.) linked to the completion of a civil engineering project in order to write a specifications note
   2.2 Model a problem and design one or more original technical solutions with the specifications note in mind.
   2.3 Evaluate and classify solutions with regard to the criteria in the specifications note (efficiency, feasibility, quality, ergonomics, security) as well as the limits (workforce, materials, construction site security and accessibility, budget, etc.)
   2.4 Test a solution as a blueprint, prototype and/or model scaled down for laboratory testing or numerical modelling.

3. Organise and carry out a research project to understand a physical phenomenon or new problem pertaining to civil engineering
   3.1 Document and summarize the existing body of knowledge.
   3.2 Suggest a model and/or an experimental device allowing for the simulation and testing of hypotheses related to the phenomenon being studied.
   3.3 Write a summary report in such a way as the results are usable later on by other people; explain any potential theoretical and/or technical innovations resulting from the research

4. Participate in a group project
   4.1 Frame and explain the project’s objectives while taking into account its issues and constraints (deadlines, quality, resources, budget)
   4.2 Collaborate on a work schedule, deadlines and roles to be played
   4.3 Work in a multidisciplinary environment with peers holding different points of view; manage any resulting disagreement or conflicts.
   4.4 Make team decisions and assume the consequences of those decisions (whether they are about technical solutions or the division of labour to complete a project).
   4.5 Communicate effectively through reports, blueprints, presentations or other documents tailored to your interlocutor/contact person

5. Communicate effectively through reports, blueprints, presentations or other documents tailored to your interlocutor/contact person
   5.1 Identify the needs of the clients or users (who often come from public or private entities): question, listen and understand all aspects of their request and not just the technical aspects.
5.2 Present your arguments convincingly to your interlocutors (technicians, colleagues, clients, superiors).
5.3 Communicate through graphics and diagrams: interpret a diagram, present results, structure information.
5.4 Read and analyse different technical documents (rules, blueprints, specification notes).
5.5 Draft documents that take into account contextual requirements and social conventions.
5.6 Make a convincing oral presentation (in French or English) using modern communication techniques.

6. Behave with professionalism and rigor as well as with a sense of ethics when doing your job

6.1 Rigorously apply the standards of your field (terms, units of measure, quality standards and security).
6.2 Find solutions that go beyond strictly technical issues by considering sustainable development and the ethical aspects of a project.
6.3 Demonstrate critical awareness of a technical solution in order to verify its robustness and minimize the risks that may occur during implementation.
6.4 Evaluate oneself and independently develop necessary skills to stay up-to-date in one’s field.

Programme structure

The Master’s degree programme includes:

- Core curriculum (56 credits)
- Final specialisation courses (30 credits), including a 9 week long company internship
- Elective courses from one or more major fields of study (minimum 18 credits from structural, hydraulic or geotechnical engineering) or elective courses (see below)

The company internship lasts 9 weeks and is to be completed during the second semester of the first year of the Master’s degree programme during May and June. Consequently, all coursework during this semester is completed by the end of March with the evaluation period taking place in April. Thus, students are free of all academic obligations in May and June during their internship.

The graduation project is normally completed during the 2nd year. Regarding required and elective courses, students may take these courses in the 1st or 2nd year as long as they have completed the course prerequisites. This is particularly the case for students who have completed part of their education 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 if they have participated in an academic activity that is approved as equivalent 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 required 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).

The student course programme will be submitted for approval by the programme commission in charge of the Master in civil engineering.

For a programme-type, and regardless of the focus, options/or elective courses selected, this master will carry a minimum of 120 credits divided over two annual units, corresponding to 60 credits each.

> Core courses for the Master in Civil Engineering [ en-prog-2020-gce2m-lgce220t.html ]
> Professional Focus [ en-prog-2020-gce2m-lgce220s ]

Options courses

> Majors for master in civil engineering [ en-prog-2020-gce2m-lgce103g.html ]
  > Major in Geotechnical engineering [ en-prog-2020-gce2m-lgce223o.html ]
  > Major in Structural engineering [ en-prog-2020-gce2m-lgce226o.html ]
  > Major in Hydraulic engineering [ en-prog-2020-gce2m-lgce225o.html ]
  > Major in construction and architecture [ en-prog-2020-gce2m-lgce227o.html ]
  > Major in business creation and management [ en-prog-2020-gce2m-lgce104g.html ]
  > Major in small and medium sized business creation [ en-prog-2020-gce2m-lfsa221o.html ]
  > Major in Business risks and opportunities [ en-prog-2020-gce2m-lgce228o.html ]
> Elective courses [ en-prog-2020-gce2m-lgce102g.html ]
  > Elective courses available for Master students in Civil Engineering [ en-prog-2020-gce2m-lgce229o.html ]
  > Elective courses: transversal skills and contacts with industry [ en-prog-2020-gce2m-lgce956o.html ]

GCE2M Detailed programme
# Programme by subject

## CORE COURSES [56.0]

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Optional</th>
<th>Courses not taught during 2020-2021</th>
<th>Periodic courses not taught during 2020-2021</th>
<th>Activity with requisites</th>
</tr>
</thead>
</table>

### Graduation project/End of studies project
- **LGCE2990**
  - Graduation project/End of studies project
  - Credits: 28
  - Period: 1 + 2q

### Civil and environmental engineering (19 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2071</td>
<td>Geotechnics</td>
<td>5</td>
<td>1q X</td>
</tr>
<tr>
<td>LGCIV2033</td>
<td>Steel and composite steel-concrete structures</td>
<td>5</td>
<td>1q X</td>
</tr>
<tr>
<td>LGCIV2051</td>
<td>Applied hydraulics : open-channel flows</td>
<td>5</td>
<td>1q X</td>
</tr>
<tr>
<td>LGCIV2041</td>
<td>Numerical analysis of civil engineering structures</td>
<td>4</td>
<td>2q X</td>
</tr>
</tbody>
</table>

### Civil engineering project (7 credits)
- **LGCIV2012**
  - Project 2: Civil engineering works
  - Credits: 7
  - Period: 1q

### Religion courses for students in exact sciences (2 credits)

The students select one course between:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTECO2100</td>
<td>Sociétés, cultures, religions : Biblical readings</td>
<td>2</td>
<td>1q X</td>
</tr>
<tr>
<td>LTECO2300</td>
<td>Sociétés, cultures, religions : Ethical questions</td>
<td>2</td>
<td>1q X</td>
</tr>
<tr>
<td>LTECO2200</td>
<td>Sociétés-cultures-religions : Human Questions</td>
<td>2</td>
<td>1 ou 2q</td>
</tr>
</tbody>
</table>

## PROFESSIONAL FOCUS [30.0]

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Optional</th>
<th>Courses not taught during 2020-2021</th>
<th>Periodic courses not taught during 2020-2021</th>
<th>Activity with requisites</th>
</tr>
</thead>
</table>

### Compulsory courses (20 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2011</td>
<td>Project 1</td>
<td>7</td>
<td>1q X</td>
</tr>
<tr>
<td>LGCIV2014</td>
<td>Building technology</td>
<td>3</td>
<td>1q X</td>
</tr>
<tr>
<td>LGCIV2072</td>
<td>Geotechnical Design</td>
<td>5</td>
<td>2q X</td>
</tr>
<tr>
<td>LGCIV2013</td>
<td>Hydraulic structures, bridges and roads</td>
<td>5</td>
<td>2q X</td>
</tr>
</tbody>
</table>
### Company internships (10 credits)

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Hours</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFSA2995</td>
<td>Company Internship</td>
<td>10</td>
<td>30h</td>
<td>1</td>
</tr>
</tbody>
</table>

Jean-Pierre Raskin
OPTIONS

Majors for master in civil engineering

> Major in Geotechnical engineering  [en-prog-2020-gce2m-lgce223o ]
> Major in Structural engineering  [en-prog-2020-gce2m-lgce226o ]
> Major in Hydraulic engineering  [en-prog-2020-gce2m-lgce225o ]
> Major in construction and architecture  [en-prog-2020-gce2m-lgce227o ]

Major in business creation and management

> Major in small and medium sized business creation  [en-prog-2020-gce2m-lfsa221o ]
> Major in Business risks and opportunities  [en-prog-2020-gce2m-lgce228o ]

Elective courses

> Elective courses available for Master students in Civil Engineering  [en-prog-2020-gce2m-lgce229o ]
> Elective courses: transversal skills and contacts with industry  [en-prog-2020-gce2m-lgce956o ]

MAJOR IN GEOTECHNICAL ENGINEERING

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Courses not taught during 2020-2021</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Periodic courses taught during 2020-2021</strong></td>
<td></td>
</tr>
</tbody>
</table>

Option: Activity with requisites

De 15 à 30 CREDITS parmi

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Duration</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2076</td>
<td>Geotechnical risks</td>
<td>Jean-François Vanden Berghe</td>
<td>20h+15h</td>
<td>4 Credits</td>
<td>1q x</td>
</tr>
<tr>
<td>LGCIV2073</td>
<td>Hydrogeology and Geoenvironment</td>
<td></td>
<td>30h</td>
<td>3 Credits</td>
<td>1q x x</td>
</tr>
<tr>
<td>LGCIV2075</td>
<td>Geosynthetics</td>
<td></td>
<td>20h</td>
<td>3 Credits</td>
<td>2q x x</td>
</tr>
<tr>
<td>LGCIV2074</td>
<td>Offshore Geotechnics</td>
<td></td>
<td>20h+15h</td>
<td>4 Credits</td>
<td>2q x x</td>
</tr>
<tr>
<td>LBI1336</td>
<td>Sciences du sol et excursions intégrées</td>
<td></td>
<td>30h +37.5h</td>
<td>5 Credits</td>
<td>2q x x</td>
</tr>
</tbody>
</table>

MAJOR IN STRUCTURAL ENGINEERING

<table>
<thead>
<tr>
<th>Mandatory</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Courses not taught during 2020-2021</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Periodic courses taught during 2020-2021</strong></td>
<td></td>
</tr>
</tbody>
</table>

Option: Activity with requisites

De 15 à 30 CREDITS parmi

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Duration</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2032</td>
<td>Prestressed concrete structures</td>
<td>Jean-François Cap</td>
<td>20h+15h</td>
<td>4 Credits</td>
<td>1q x</td>
</tr>
<tr>
<td>LGCIV2042</td>
<td>Dynamics of structures</td>
<td>João Saraiva Esteves Pacheco De Almeida</td>
<td>20h+15h</td>
<td>4 Credits</td>
<td>1q x</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Instructor(s)</td>
<td>Credits</td>
<td>Duration</td>
<td>Year</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------</td>
<td>----------------------------------------</td>
<td>---------</td>
<td>----------</td>
<td>------</td>
</tr>
<tr>
<td>LGCIV2043</td>
<td>Wooden structures</td>
<td>Pierre Latteur</td>
<td>4</td>
<td>20h+15h</td>
<td>2q</td>
</tr>
<tr>
<td>LGCIV2045</td>
<td>Structures under fire conditions</td>
<td>Olivier Vassart</td>
<td>3</td>
<td>20h</td>
<td>2q</td>
</tr>
<tr>
<td>LGCIV2046</td>
<td>Earthquake engineering</td>
<td>João Saraiva Esteves</td>
<td>4</td>
<td>20h+15h</td>
<td>2q</td>
</tr>
<tr>
<td>LMECA2520</td>
<td>Calculation of planar structures</td>
<td>Issam Doghri</td>
<td>5</td>
<td>30h+30h</td>
<td>2q</td>
</tr>
<tr>
<td>LMECA2640</td>
<td>Mechanics of composite materials</td>
<td>Issam Doghri</td>
<td>5</td>
<td>30h+30h</td>
<td>2q</td>
</tr>
<tr>
<td>LMAPR2483</td>
<td>Durability of materials (TM)</td>
<td></td>
<td>5</td>
<td>30h+22.5h</td>
<td>2q</td>
</tr>
<tr>
<td>LICAR2841</td>
<td>Conception de l'architecture avec le bois</td>
<td>Frank Norrenberg</td>
<td>3</td>
<td>22.5h</td>
<td>1q</td>
</tr>
</tbody>
</table>

*Year: 1 = First year, 2 = Second year*
### MAJOR IN HYDRAULIC ENGINEERING

- **Mandatory**
- **Optional**
- **Courses not taught during 2020-2021**
- **Periodic courses not taught during 2020-2021**
- **Activity with requisites**

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

De 15 à 21 CREDITS parmi

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Teacher(s)</th>
<th>Credits</th>
<th>Year</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LGCIV2055</td>
<td>Analysis and mitigation of floods</td>
<td>Sandra Soares Frazao</td>
<td>4</td>
<td>1</td>
<td>x x</td>
</tr>
<tr>
<td>LGCIV2053</td>
<td>Fluvial hydraulics</td>
<td>Sandra Soares Frazao</td>
<td>4</td>
<td>2</td>
<td>x x</td>
</tr>
<tr>
<td>LGCIV2054</td>
<td>Numerical simulation of transient flows</td>
<td>Sandra Soares Frazao</td>
<td>4</td>
<td>2</td>
<td>x x</td>
</tr>
<tr>
<td>LGCIV2056</td>
<td>Marine Hydrodynamics</td>
<td>Eric Deleersnijder</td>
<td>5</td>
<td>1</td>
<td>x x</td>
</tr>
<tr>
<td>LGCIV2052</td>
<td>Hydropower plants</td>
<td>Sandra Soares Frazao</td>
<td>3</td>
<td>2</td>
<td>x x</td>
</tr>
<tr>
<td>LBRES2204</td>
<td>Integrated water management of water resources</td>
<td>[M]</td>
<td>4</td>
<td>1</td>
<td>x x</td>
</tr>
<tr>
<td>LMECA2853</td>
<td>Turbulence</td>
<td>Eric Deleersnijder</td>
<td>5</td>
<td>1</td>
<td>x x</td>
</tr>
</tbody>
</table>
**MAJOR IN CONSTRUCTION AND ARCHITECTURE**

- **Mandatory**
- **Courses not taught during 2020-2021**
- **Optional**
- **Periodic courses taught during 2020-2021**
- **Activity with requisites**

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

### De 15 à 30 CREDITS parmi

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit(s)</th>
<th>Hours</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LICAR2801</td>
<td>Théorie et recherche en sciences physiques :édification soutenable</td>
<td>9 Credits</td>
<td>80h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LICAR2902</td>
<td>Gestion de projet et monde de l’édification</td>
<td>4 Credits</td>
<td>20h+20h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LICAR2901</td>
<td>Droit de l’espace bâti et non bâti</td>
<td>3 Credits</td>
<td>30h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LICAR2823</td>
<td>Édification soutenable 3 : architecture climatique</td>
<td>3 Credits</td>
<td>22.5h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LICAR2841</td>
<td>Conception de l’architecture avec le bois</td>
<td>3 Credits</td>
<td>22.5h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LICAR2831</td>
<td>Architecture : rénovation, restauration</td>
<td>3 Credits</td>
<td>22.5h</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**MAJOR IN SMALL AND MEDIUM SIZED BUSINESS CREATION**

In keeping with most of the EPL Masters’ degrees, the goal of this major is to familiarize the student with the specifics of entrepreneurship and business development in order to develop the necessary abilities, knowledge and tools to create a business. It is a truly interdisciplinary initiative where students from different faculties are brought together in cross-disciplinary teams to create an entrepreneurial project.

The Interdisciplinary program in entrepreneurship (CPME) is spread over two years and is integrated into more than 30 Masters (9 faculties). The program includes a collective and interdisciplinary master thesis focused on an entrepreneurial project (start-up or spin-off) and realized in teams of 3 to 4 students from 3 to 4 different faculties. The access is reserved for a small number of students by a selection procedure. Additional information may be found at www.uclouvain.be/cpme.

This major is not available in English and may not be taken at the same time as the major “Business risks and opportunities”.

### De 20 à 25 CREDITS parmi

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit(s)</th>
<th>Hours</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPME2001</td>
<td>Entrepreneurship Theory (in French)</td>
<td>5 Credits</td>
<td>30h+20h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LCPME2002</td>
<td>Managerial, legal and economic aspects of the creation of a company (in French)</td>
<td>5 Credits</td>
<td>30h+15h</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>LCPME2003</td>
<td>Business plan of the creation of a company (in French)</td>
<td>5 Credits</td>
<td>30h+15h</td>
<td>2q</td>
<td>x</td>
</tr>
<tr>
<td>LCPME2004</td>
<td>Advanced seminar on Entrepreneurship (in French)</td>
<td>5 Credits</td>
<td>30h+15h</td>
<td>2q</td>
<td>x</td>
</tr>
</tbody>
</table>

**Prerequisite CPME courses**

Students who have not taken management courses during their previous studies must enroll in LCPME2000.

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
<th>Credit(s)</th>
<th>Hours</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCPME2000</td>
<td>Venture creation financement and management I</td>
<td>5 Credits</td>
<td>30h+15h</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
### MAJOR IN BUSINESS RISKS AND OPPORTUNITIES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFSA1290</td>
<td>Introduction to financial and accounting management</td>
<td>Philippe Grégoire</td>
<td>30h+15h</td>
<td>4</td>
</tr>
<tr>
<td>LFSA2140</td>
<td>Elements of law for industry and research</td>
<td></td>
<td>30h</td>
<td>3</td>
</tr>
<tr>
<td>LFSA2210</td>
<td>Organisation and human resources</td>
<td>John Cultiaux, Eline Jammaers</td>
<td>30h</td>
<td>3</td>
</tr>
<tr>
<td>LFSA2230</td>
<td>Introduction to management and to business economics</td>
<td>Benoît Gailly</td>
<td>30h+15h</td>
<td>4</td>
</tr>
<tr>
<td>LFSA2245</td>
<td>Environment and business</td>
<td></td>
<td>30h</td>
<td>3</td>
</tr>
</tbody>
</table>

#### De 17 à 20 CREDITS parmi

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFSA2202</td>
<td>Ethics and ICT</td>
<td>Axel Gossieres, Olivier Pereira</td>
<td>30h</td>
<td>3</td>
</tr>
<tr>
<td>LLSMS2280</td>
<td>Business Ethics and Compliance Management</td>
<td></td>
<td>30h</td>
<td>5</td>
</tr>
</tbody>
</table>

#### 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.
ELECTIVE COURSES AVAILABLE FOR MASTER STUDENTS IN CIVIL ENGINEERING

- **Mandatory**
- **Optional**
- **Courses not taught during 2020-2021**
- **Periodic courses taught during 2020-2021**
- **Periodic courses not taught during 2020-2021**
- **Activity with requisites**

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

The elective courses being recommended and available for Master students in civil engineering are listed here above, in the majors and other lists of elective courses. However, a student can further suggest other courses that would be relevant for his/her personal curriculum, pending that this is compliant with the rules for setting up a personal Master program.

### Contenu:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMECA2410</td>
<td>Mechanics of Materials</td>
<td>Laurent Delannay Aude Simar</td>
<td>5</td>
<td>2q</td>
</tr>
<tr>
<td>LFSA2212</td>
<td>Innovation classes</td>
<td>Benoît Macq Jean-Pierre Raskin Benoît Raucent</td>
<td>5</td>
<td>1q</td>
</tr>
</tbody>
</table>

### ELECTIVE COURSES: TRANSVERSAL SKILLS AND CONTACTS WITH INDUSTRY

- **Mandatory**
- **Optional**
- **Courses not taught during 2020-2021**
- **Periodic courses taught during 2020-2021**
- **Periodic courses not taught during 2020-2021**
- **Activity with requisites**

The student selects between 3 and 17 credits in this list below or in the courses of the major "business risks and opportunities”. An alternative is to select the Major in small and medium sized business creation.

### Contenu:

- **Transversal skills and contacts with industry**
  - The student selects min 3 credits among the courses of the majors "business risks and opportunities", "small and medium sized business creation" and courses of professional integration activity specific to the program.
  - **Professional integration activity specific to the program**

- **Communication**

  Students may select max. 8 credits of languages courses or group dynamics:
  
  Max=8 CREDITS parmi

#### 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>Seminar Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALLE2500</td>
<td>Professional development seminar German</td>
<td>Caroline Klein Ann Rinder (coord.)</td>
<td>3</td>
<td>2q</td>
</tr>
<tr>
<td>LALLE2501</td>
<td>Professional development seminar German</td>
<td>Caroline Klein Ann Rinder (coord.)</td>
<td>5</td>
<td>2q</td>
</tr>
<tr>
<td>LESPA2600</td>
<td>Vocational Induction Seminar - Spanish (B2.2/C1)</td>
<td>Paula Lorente Fernandez (coord.) Maria Tirado Fernandez (compensates Paula Lorente Fernandez)</td>
<td>3</td>
<td>1q</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Lecturer(s)</td>
<td>Credits</td>
<td>Year</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>LEEA2601</td>
<td>Vocational Induction Seminar - Spanish (B2.2/C1)</td>
<td>Paula Lorente Fernandez (coord.)</td>
<td>5</td>
<td>1q</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alicia Maria Tirado Fernandez</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(compensates Paula Lorente Fernandez)</td>
<td></td>
<td>2q</td>
</tr>
<tr>
<td>LNEER2500</td>
<td>Seminar of Entry to professional life in Dutch - Intermediate level</td>
<td>Isabelle Demeulenaere (coord.) Marie-Laurence Lambrecht</td>
<td>3</td>
<td>1 ou 2q</td>
</tr>
<tr>
<td>LNEER2600</td>
<td>Seminar of entry to professional life in Dutch - Upper-Intermediate level</td>
<td>Isabelle Demeulenaere (coord.)</td>
<td>3</td>
<td>2q</td>
</tr>
</tbody>
</table>

**Group dynamics**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Year</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEPL2351</td>
<td>Dynamique des groupes - Q1</td>
<td>3</td>
<td>1q</td>
<td>x</td>
</tr>
<tr>
<td>LEPL2352</td>
<td>Dynamique des groupes - Q2</td>
<td>3</td>
<td>2q</td>
<td>x</td>
</tr>
</tbody>
</table>

**Other non-disciplinary courses**

The student may further select maximum 8 credits in other disciplines.
Course prerequisites

A document entitled en-prerequis-2020-gce2m.pdf specifies the activities (course units - CU) with one or more pre-requisite(s) within the study programme, that is the CU whose learning outcomes must have been certified and for which the credits must have been granted by the jury before the student is authorised to sign up for that activity.

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

As the prerequisites are a requirement of enrolment, there are none within a year of a course.

The prerequisites are defined for the CUs for different years and therefore influence the order in which the student can enrol in the programme’s CUs.

In addition, when the panel validates a student’s individual programme at the beginning of the year, it ensures the consistency of the individual programme:

• It can change a prerequisite into a corequisite within a single year (to allow studies to be continued with an adequate annual load);
• It can require the student to combine enrolment in two separate CUs it considers necessary for educational purposes.

For more information, please consult regulation of studies and exams.

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the competences expected of every graduate on completion of the programme. You can see the contribution of each teaching unit to the programme’s reference framework of learning outcomes in the document “In which teaching units are the competences and learning outcomes in the programme’s reference framework developed and mastered by the student?”

The document is available by clicking this link after being authenticated with your UCLouvain account.
Admission

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

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

SUMMARY

- Specific Admission Requirements
- University Bachelors
- Non university Bachelors
- Holders of a 2nd cycle University degree
- Holders of a non-University 2nd cycle degree
- Adults taking up their university training
- Access on the file
- Admission and Enrolment Procedures for general registration

Specific Admission Requirements

This programme is taught in English with no prerequisite in French. The student is supposed to have at least a B2 level in the European Framework of Reference. 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>Bachelor in Engineering</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>Others Bachelors of the French speaking Community of Belgium</td>
<td>Bachelor in engineering</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>Bachelors of the Dutch speaking Community of Belgium</td>
<td>Bachelor in engineering</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>Foreign Bachelors</td>
<td>Bachelor in engineering</td>
<td>Bachelor degree of Cluster Institution</td>
<td>Direct Access</td>
</tr>
<tr>
<td></td>
<td>For others institutions</td>
<td>Based on application: accepted, conditional on further training, or refusal</td>
<td>See Personalized Access</td>
</tr>
</tbody>
</table>
Non university Bachelors

> Find out more about links to the university

Holders of a 2nd cycle University degree

<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>

Masters

<table>
<thead>
<tr>
<th>Masters</th>
<th>Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master in engineering</td>
<td>Direct Access</td>
</tr>
</tbody>
</table>

Holders of a non-University 2nd cycle degree

Adults taking up their university training

> See the website Valorisation des acquis de l'expérience

It is possible to gain admission to all masters courses via the validation of professional experience procedure.

Access on the file

Reminder : all Masters (apart from Advanced Masters) are also accessible on file.

The first step of the admission procedure requires to submit an application online: https://uclouvain.be/en/study/inscriptions/futurs-etudiants.html

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

Admission and Enrolment Procedures for general registration
Teaching method

Methods that promote multidisciplinary studies
The Master’s degree programme in civil and environmental engineering (with a focus on construction) is by nature interdisciplinary. This is especially apparent in two projects: a building project completed with architectural engineering students and a structural engineering project completed with engineering students from all fields. Among the major courses, some are included in the Master’s degree programmes in architectural engineering (design and architecture), physical engineering, chemistry and materials science, mechanics and bioengineering as well urban planning and sustainable development. Furthermore, students may expand their knowledge by taking elective courses in non-technical disciplines.

Various teaching strategies
The teaching methods used in the Master’s degree programme in civil and environmental engineering are 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.

One important teaching method is the assignment of projects that integrate several subjects. This allows students to develop the critical thinking skills necessary to design and model in a laboratory.

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 learning by questioning, a process inherent in the research process.

During the 2nd semester of the 1st year of the Master’s degree programme, students may participate in a two-month long company internship, which allows them to immerse themselves in the professional world.

Half of the students’ workload in the last year consists of the graduation project and offers students the possibility to deal in-depth with a given subject, which given its size and context, provides a real initiation into the working life of engineers or researchers.

Diverse learning situations
The Master’s degree programme uses a variety of teaching methods depending on the discipline:

- lectures
- projects
- exercise sessions
- problem solving sessions
- case studies
- laboratories
- computer simulations
- tutoring sessions
- internships in industry or research
- visits to construction sites
- factory visits
- graduation trips
- group work
- individual work
- seminars offered by outside scientific experts

In certain cases, e-Learning allows students to work at their own pace and complete virtual experiments.

This variety of learning situations 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. Students also have access to the most up-to-date information technology (material, software, networks).

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".

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.

In general, student evaluations are done orally depending on the type of course:
- An oral exam based on material covered in a given course. This oral exam may be coupled with a written exam based on practical exercises. The oral exam provides students with the opportunity to dialogue their professors, allowing the latter to evaluate whether the student can clearly and convincingly present their ideas and argue in their favour.
- Regarding projects, students must schedule an oral defence of a technical report. During the defence, special attention is paid to students' communication skills.
- Some classes assign exercises, which are completed throughout the year allowing for continuous assessment of student work. The exercise results are discussed with each student. It is also expected that students will explain the steps that they took to complete the exercises thereby showing whether they truly understood the relevant concepts.

At the beginning of the semester, professors will explain their marking scheme, which is based on the learning outcomes of the course (that it frequently shares with those of the Master’s degree programme).
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**

Since its creation, the Louvain School of Engineering (EPL) has participated in diverse exchange programs that were put into place at the European level and beyond.

**Possible trainings at the end of the programme**

**Doctoral programmes**
1. GraSMech-Graduate School in Mechanics
2. ENVITAM-Sciences, Technologies and Environmental management

**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 and the Master’s degree (60) 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**

**Entity**
- **Structure entity**: SST/IMMC/GCE (GCE)
- **Denomination**: Sciences and Technology (SST)
- **Sector**: Sciences and Technology (SST)
- **Acronym**: GCE
- **Postal address**: Place du Levant 1 - bte L5.05.01 1348 Louvain-la-Neuve
  - **Tel**: +32 (0) 10 47 21 12  -  **Fax**: +32 (0) 10 47 21 79

**Academic supervisor**: Pierre Latteur

**Jury**
- **Président du Jury**: Jean-Didier Legat
- **Secrétaire du Jury**: Pierre Latteur

**Useful Contact(s)**
- **Secrétariat**: Viviane Delmarcelle