

GCE2M - Introduction

GCE2M - Teaching profile

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

1.3 Validate problem solving results

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.

2.5 Come up with recommendations to improve the operational nature of the solution under study.

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 these 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 or odmn under study).

● LGCE2990

Graduation project/End of studies project

The graduation project can be written and presented in French or English, in consultation with the supervisor. It may be accessible to exchange students

PROFESSIONAL FOCUS [30.0]

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ◊ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫🌐 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Year

1 2

o Content:

o Compulsory courses (20 credits)

○ LGCIV2011	Project 1	Pierre Latteur Hadrien Rattet Thomas Vandenberg Denis Zastavni	
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OPTIONS

The student completes his/her program with options and/or elective courses, including a minimum of 23 ECTS from the courses offered in the "Majors for Master in Civil Engineering" section".

Majors for master in civil engineering

- > Major in geotechnical engineering [en-prog-2024-gce2m-lgce223o]
- > Major in structural engineering [en-prog-2024-gce2m-lgce226o]
- > Major in hydraulic engineering [en-prog-2024-gce2m-lgce225o]
- > Major in architecture [en-prog-2024-gce2m-lgce227o]
- > Major in sustainable construction [en-prog-2024-gce2m-lgce224o]
- > Major in environmental engineering [en-prog-2024-gce2m-lgce232o]

Options et cours au choix en connaissances socio-économiques

- > Business risks and opportunities [en-prog-2024-gce2m-lgce230o]
- > Major in Interdisciplinary Program in Entrepreneurship - INEO [en-prog-2024-gce2m-lgce231o]
- > Cours au choix en connaissances socio-économiques [en-prog-2024-gce2m-lgce200o]

Other elective courses

- > Other elective courses [en-prog-2024-gce2m-lgce229o]

MAJORS FOR MASTER IN CIVIL ENGINEERING

MAJOR IN GEOTECHNICAL ENGINEERING

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

L'étudiant-e qui choisit de valider cette option doit sélectionner au minimum 15 crédits parmi les cours proposés.

Year

1 2

Content:

✘ LGCIV2073	Hydrogeology and Geoenvironment	Hadrien Ratzet	FR [q1] [30h+15h] [5 Credits] 🌐 > French-friendly	X	X	
✘ LGCIV2074	Offshore Geotechnics	Benoît Spinewine	FR [q2] [20h+15h] [4 Credits] 🌐 > French-friendly	X	X	
✘ LGCIV2076	Geotechnical risks	Jean-François Vanden Berghe	FR [q1] [20h+15h] [4 Credits] 🌐 > French-friendly	X	X	
✘ LBIR1336	Soil science and integrated excursions	Yannick Agnan (coord.) Richard Lambert Caroline Vincke	FR [q2] [30h+37.5h] [5 Credits] 🌐 > English-friendly	X	X	
✘ LBRES2103	Soil physics applied to Agronomy and Environment	Charles Bielders (coord.) Mathieu Javaux Mathieu Javaux (compensates Charles Bielders)	FR [q1] [30h+15h] [4 Credits] 🌐	X	X	

MAJOR IN STRUCTURAL ENGINEERING

- Mandatory
- ✘ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🌐 Not open to incoming exchange students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)


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

L'étudiant-e qui choisit de valider cette option doit sélectionner au minimum 15 crédits parmi les cours proposés.

Year

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MAJOR IN HYDRAULIC ENGINEERING

- Mandatory
 - ✘ Optional
 - △ Not offered in 2024-2025
 - ⊖ Not offered in 2024-2025 but offered the following year
 - ⊕ Offered in 2024-2025 but not the following year
 - △ ⊕ Not offered in 2024-2025 or the following year
 - Activity with requisites
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MAJOR IN ARCHITECTURE

- Mandatory
- ✂ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🌐 Not open to incoming exchange students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

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

L'étudiant-e qui choisit de valider cette option doit sélectionner au minimum 15 crédits parmi les cours proposés.

Minimum 15 credit(s)

Year

MAJOR IN SUSTAINABLE CONSTRUCTION

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫🌐 Not open to incoming exchange students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

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

L'étudiant-e qui choisit de valider cette option doit sélectionner au minimum 15 crédits parmi les cours proposés.

Year

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Content:

⊗ LGCIV2043	Timber Structures	Pierre Latteur	FR [q2] [20h+15h] [4 Credits] 🌐		X	X
⊗ LGCIV2047	Pathology and rehabilitation of structures	Luca Sgambi	FR [q2] [30h] [4 Credits] 🌐		X	X
⊗ LICAR2841	Conception de l'architecture avec le bois		FR [q2] [22.5h] [3 Credits] ⊖ 🌐		X	X
⊗ LMAPR2483	Durability of materials	Laurent Delannay Thomas Pardoën	EN [q2] [30h+22.5h] [5 Credits] 🌐 > French-friendly		X	X
⊗ LICAR2801	Theory and research in the physical sciences: sustainable building	Sergio Altomonte Laura Marin Restrepo Geoffrey Van Moeseke	FR [q1] [80h] [9 Credits] 🌐		X	X
⊗ LICAR2823	Edification soutenable 3 : architecture climatique	Sergio Altomonte Laura Marin Restrepo	FR [q2] [22.5h] [3 Credits] ⊕ 🌐		X	X
⊗ LICAR2831	Architecture : rénovation, restauration	Cécile Mairy	FR [q2] [22.5h] [3 Credits] ⊖ 🌐		X	X
⊗ LLOCI2006	Parametric design					

MAJOR IN ENVIRONNEMENTAL ENGINEERING

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🌐 Not open to incoming exchange students
- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

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

L'étudiant-e qui choisit de valider cette option doit sélectionner au minimum 15 crédits parmi les cours proposés.

Year

1 2

o Content:



OPTIONS ET COURS AU CHOIX EN CONNAISSANCES SOCIO-ÉCONOMIQUESBUSINESS RISKS AND OPPORTUNITIES

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫 Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

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

Year

1 2

o **Content:**

				1	2
○ LEPL2211	Business issues introduction	Benoît Gailly	EN [q2] [30h] [3 Credits] 🌐 > French-friendly	x	x
○ LEPL2212	Financial performance indicators	Anne-Catherine Provost	EN [q2] [30h+5h] [4 Credits] 🌐 > French-friendly	x	x
○ LEPL2214					

				Year	
				1	2
⊗ LNEER2600	Seminar of entry to professional life in Dutch - Upper-Intermediate level	Isabelle Demeulenaere (coord.) Dag Houdmont	⊗ [q1 or q2] [30h] [3 Credits]	x	x

⊗ Group dynamics

⊗ LEPL2351	Become a tutor	Jean-Charles Delvenne (coord.) Delphine Ducarme Thomas Pardoën Benoît Raucent	⊗ [q1] [15h+30h] [3 Credits]	x	x
⊗ LEPL2352	Become a tutor	Jean-Charles Delvenne (coord.) Delphine Ducarme Thomas Pardoën Benoît Raucent	⊗ [q2] [15h+30h] [3 Credits]	x	x

⊗ Autres UEs hors-EPL

L'étudiant-e peut choisir maximum 8 crédits de cours hors EPL, considérés comme non-disciplinaires par la commission de programme.

Course prerequisites

The **table** below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

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

Prerequisites and student's annual programme

As the prerequisite is for CU registration purposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme's CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

- require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
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GCE2M - Information

Access Requirements

		degree may have an adapted master programme.
	For others institutions	Access based on application See Personalized Access

Non university Bachelors

> Find out more about [links](#) to the university

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			

Masters

Master in engineering	Direct access
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Holders of a non-University 2nd cycle degree

Access based on validation of professional experience

> It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about [Validation of priori experience](#).

Access based on application

Access based on application : access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.

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 \(epl-admission@uclouvain.be\)](mailto:epl-admission@uclouvain.be)

Admission and Enrolment Procedures for general registration

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

Mobility and/or Internationalisation outlook

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

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

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

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

Possible trainings at the end of the programme

Doctoral programmes

1. [GraSMech-Graduate School in Mechanics](#)
2. [ENVITAM-Sciences, Technologies and Environmental management](#)

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

For example:

- Different Master's degree programmes in management (automatic admission based on written application).
- The [Master \[60\] in Information and Communication](#) at Louvain-la-Neuve or the [Master \[60\] in Information and Communication](#) at Mons

Contacts

Curriculum Management

Entity

Structure entity

Denomination

SST/EPL/GC

(GC)

