UCLouvain

BIRE2M

2026 - 2027

Master [120] in Environmental Bioengineering

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In French
Dissertation/Graduation Project : **YES** - Internship : **optional**
Activities in English: **YES** - Activities in other languages : **NO**
Activities on other sites : **NO**
Main study domain : **Sciences agronomiques et ingénierie biologique**
Organized by: **Faculty of bioscience engineering (AGRO)**
Programme acronym: **BIRE2M** - Francophone Certification Framework: 7

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BIRE2M - Introduction

Introduction

BIRE2M - Teaching profile

Learning outcomes

Master in Environmental Bioengineering students must endeavour to diagnose and solve complex and original issues in bioengineering through a multidisciplinary approach in order to develop and implement innovative and sustainable solutions.

This Master's programme aims to train experts in the field of management, conservation and the responsible use of natural renewable resources (land and water) as well as natural and man-made ecosystems.

The future bioengineers acquire the knowledge and skills required to become:

- professionals able to tackle and diagnose environmental problems: the management and use of resources (soil, water, plants) and ecosystems, land management;
- scientists able to understand complex processes on different scales, used to multidisciplinary approaches and able to collaborate with other specialists;
- innovators tasked with developing new resource management methods that respect the environment.

Highly versatile and multidisciplinary in character, the course dispensed by the Faculty of Biological, Agricultural and Environmental Engineering focuses on acquiring skills which combine theory and practice to train "bioengineers" mastering a broad base of scientific and technological knowledge and skills allowing them to understand and conceptualise biological, agricultural and environmental systems.

On successful completion of this programme, each student is able to :

1. To explore an integrated body of knowledge (knowledge, methods and techniques, models and processes) in natural and human sciences which serves as the foundation from which to operate with expertise in the field of environmental science and technology.

1.1 To build an advanced knowledge base in the field of environmental science and technologies and more specifically in the following disciplines [1]:

- Soil and water scieces and quality
- Ecology
- Geomatics applied to the environment
- Analysis of natural and agrarian systems
- Statistics and data analysis

1.2 To build highly specialised (cutting-edge) scientific knowledge in one of the [2] following bioengineering specialisations:

- Environmental technology: water-soil-earth
- Land management
- Water and land resources
- Information analysis and management in biological engineering

1.3 To master procedural skills in conducting experiments [3] in a controlled or natural environment, and in the observation and monitoring of natural and man-made systems at different scales using specific techniques related to their choice of specialisation.

1.4 To apply their knowledge critically to tackle a complex environmental problem, by incorporating processes at different scales ranging from the mineral and living organism scale, to landscape and biosphere.

1.5 To apply multiple strands of knowledge to resolve a multidisciplinary environmental problem in order to develop relevant and innovative solutions.

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[1] Refers to the choice of the Master (core subjects and professional focus). The knowledge of some of these disciplines will have been partially acquired in the Bachelor's degree (in the advanced minor).

[2] Refers to the option / module choice in the Master.

[3] Refers to mastering all the laboratory and field techniques used for the characterisation or monitoring of a system.

2. To explore an integrated body of "engineering and management knowledge" which serves as the foundation from which to operate with expertise in the field of environmental sciences.

2.1 To build an advanced knowledge base (e.g.: concepts, laws, technologies) and tools (e.g. modelling, programming) in engineering sciences:

- Geomatics applied to the environment
- Hydrology
- Applied soil sciences
- Topometry and photogrammetry
- Ecological and environmental diagnosis
- Environmental statistical data analysis
- Support for decision-making and project management

2.2 To build and master highly specialised knowledge and tools in one of the following bioengineering specialisations:

- Environmental technology: water-soil-earth
- Land management
- Water and land resources
- Information analysis and management in biological engineering

2.3 To master the operational use of specialised tools in engineering sciences (e.g.: systems analysis, statistical analysis, programming, modelling, etc.) :

- Measurement techniques
- Environmental statistical data analysis
- Specific tools in relation to the choice of specialisation

2.4 To activate and apply their knowledge of engineering with a critical mind and using a quantitative approach to tackle a complex problem in the environmental field by incorporating processes at different scales ranging from the mineral and living organism scale, to landscape and biosphere.

2.5 To locate and understand how companies and organisations operate, including the role of the different players, their financial and social realities and responsibilities and the challenges and constraints which characterise their environment.

3. To design and execute a research project, implementing an analytical scientific and, if applicable, systematic approach, to further understanding of an original research problem in their field of specialisation, incorporating several disciplines.

This skill set will develop throughout the 5 years. Amongst others it requires the use of a set of skills as described below. These skills correspond in fact to the different stages of the scientific approach.

The majority of these skills are developed in the Bachelor and Master programmes, with differentiation predominately on 3 levels:

- the level of detail and complexity applied to the scientific problem/research studied;

- the degree of innovation shown by the student;

- the degree of autonomy demonstrated by the student throughout the process.

3.1 To summarise the state of knowledge on a complex research problem which relates to their choice of specialisation: to research information, to select and validate its reliability based on the nature of the source of the information and comparing several sources.

3.2 To specify and define the research question.

3.3 To examine the research question using conceptual abstraction and formulate hypotheses.

3.4 To develop and implement a rigorous methodology to answer the research question.

3.5 To master and apply statistical data analysis tools in the context of a complex scientific issue.

3.6 To analyse and interpret the results to produce a substantiated critique on a complex scientific question.

3.7 To demonstrate an ability to summarise and formulate conclusions on a complex scientific question.

3.8 In each of the skills mentioned above, to demonstrate rigour, precision and the critical thinking essential for any scientific method.

3.9 To demonstrate innovation in at least one of the skills mentioned above.

4. To formulate and resolve a complex environmental engineering problem related to new situations presenting a degree of uncertainty. The student will be able to design appropriate, sustainable and innovative solutions through a systematic approach. This problem may be related to the management and use of resources (soil, water, plant) and ecosystems, to land management, to the impact of human activities on the capacity of the environment to provide goods and services to humanity.

4.1 To strategically differentiate the key elements from the less critical elements relating to a complex environmental engineering problem, in order to define and determine the field of action for this problem.

4.2 To identify the knowledge acquired and that to be acquired to resolve the complex environmental engineering problem.

4.3 To analyse a complex environmental engineering problem using a systematic and multidisciplinary approach in order to carry out diagnostics and formulate the specifications.

4.4 To demonstrate an ability for conceptual abstraction and formalisation in analysing and resolving the complex environmental engineering problem.

4.5 To develop scientifically and technologically relevant and innovative solutions, through a multidisciplinary (integration and articulation of knowledge) and quantitative approach, making it possible to develop products, systems, processes or services in the field of environmental sciences and technologies.

4.6 To test solutions and evaluate their impact in relation to an economic, environmental, social and cultural context.

4.7 To formulate concrete and responsible recommendations to encourage sustainable development in relation to the efficient operational and sustainable implementation of the solutions proposed.

5. To design and implement a multidisciplinary project, alone and in a team, with the stakeholders concerned while taking the objectives into account and incorporating the scientific, technical, environmental, economic and human factors.

The graduate must be able to manage a project alone and in a team, not only the scientific and technological dimensions but also the financial and, if applicable social aspects and with a degree of complexity representative of typical professional scenarios.

5.1 To know and understand the principles and factors of group dynamics (including the constructive role of conflict).

5.2 To know and understand the project management process (project cycles): formulation and definition of the project, project management, monitoring and evaluation of the project.

5.3 To situate a multidisciplinary project within its environment and identify the issues, constraints and stakeholders and to clearly define its objectives.

5.4 To plan and develop all the stages of a multidisciplinary project, alone and in a team, and to work together after having allocated the tasks.

5.5 To involve key players at appropriate stages in the process.

5.6 To work within a team and collaborate effectively to achieve common objectives.

5.7 To take and assume the decisions required for the effective project management either alone or in a team in order to achieve the intended objectives.

5.8 To recognise and take into consideration the diversity of opinions and ways of thinking of team members and to manage conflict constructively to work towards a consensual decision.

5.9 To lead a team (demonstrate leadership): to motivate team members, to develop a collaborative climate, to guide them to cooperate in the achievement of a common objective, to manage conflict.

6. To communicate, interact and convince in a professional manner, in French and English at level C1 (Common European Framework of Reference for Languages published by the Council of Europe), both verbally and in writing, adapting to their conversational partners and the context.

6.1 To understand and use scientific articles and advanced technical documents in French and English.

6.2 To communicate information, ideas, solutions and conclusions as well as the knowledge and underlying principles, in a clearly structured, substantiated, concise and comprehensive way (as appropriate) both verbally and in writing according to the standards of communication specific to the context and by adapting their presentation according to the level of expertise of the audience.

6.3 To develop logic diagrams to concisely pose complex global questions.

6.4 To communicate the state of knowledge in a specific field concisely and critically.

6.5 To communicate results and conclusions, and to support a message, in an appropriate manner using scientific tables, graphs and diagrams.

6.6 To communicate effectively and respectfully with various stakeholders, demonstrating listening skills, empathy and assertiveness.

6.7 To argue and convince: to understand the points of view of various stakeholders and present their arguments accordingly.

6.8 To master the IT and technological tools essential for professional communication.

6.9 To learn English to level C1 according to the European Framework.

7. To act critically and responsibly by taking account of sustainable development issues and operating with a humanistic outlook.

7.1 To demonstrate intellectual independence of thought, to examine knowledge and professional practices and trends critically.

7.2 To make decisions and act in society with respect for ethical values and in compliance with laws and conventions.

7.3 To make decisions and act responsibly by factoring in sustainable development values.

7.4 To make decisions and act with respect for humanistic values, cultural openness and solidarity, especially in North–South relations.

7.5 To assume professional responsibilities and act in a managerial capacity vis-à-vis their colleagues.

8. To demonstrate independence and be proactive in acquiring new knowledge and developing new skills in order to adapt to changing or uncertain situations and to grow, to build a professional project within a continuing development approach.

The majority of these skills are not developed exclusively through specific activities, but rather as a result of the multiple and diverse situations encountered throughout the course, the educational programmes and the way in which it is run, as well as through the university environment.

8.1 To manage their work independently: to set priorities, anticipate and plan all the activities in time, including in the face of changing, uncertain or urgent situations.

8.2 To manage stress and frustrations in urgent, changing, inconsistent or uncertain situations.

8.3 To question and know themself: to undergo self-assessment, by analysing their successes and failures, to identify strengths and weaknesses and their personal performance in relation to the context.

8.4 To grow personally and professionally: to build a professional project in line with their own values and aspirations, to manage their motivation and involvement in bringing the project to fruition, to persevere in complex situations.

8.5 To independently identify and absorb new knowledge and skills essential for learning to understand new contexts quickly.

8.6 To commit to the lifelong learning which will allow them to grow socially and professionally.

Programme structure

This programme comprises a series of activities totalling 120 credits spread over two years worth 60 credits each. It is structured as follows :

- **core subjects programme of 47 credits** with the opportunity to do an internship of 40 days in a company;
- **professional focus programme** 30 credits (compulsory)
- **choice of one option course for 23 credits and its complement(s) of 20 credits to choose amongst 4 possibilities.** The fifth complement called "INEO" is generalist in nature and may be taken to follow on from any option course.

BIRE2M Programme

Detailed programme by subject

CORE COURSES [47.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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	Year 2
LBIRE2102	Applied geomatics	Pierre Defourny (coord.) Grégory Duveiller Bogdan (compensates Pierre Defourny) Julien Radoux (compensates Pierre Defourny)	FR [q1] [30h+22.5h] [4 Credits] > English-friendly	x	
LBIRE2104	Applied soil sciences	Yannick Agnan Pierre Delmelle (coord.)	FR [q1] [22.5h+22.5h] [4 Credits] > English-friendly	x	
LBIRE2105	Assessment of water - soil - air quality	Yannick Agnan (coord.) Philippe Maetz Xavier Rollin	FR [q1] [30h+0h] [3 Credits]	x	
LBIRE2205A	Decision tools and project management - Decision tools	Raphaël Amory Frédéric Gaspart	EN [q1] [22.5h+7.5h] [3 Credits] > French-friendly		x

Disciplinary project (10 credits)

LBIRE2130	Environmental Impact Assessment : project and introduction to database management	Yannick Agnan Yannick Agnan (compensates Patrick Bogaert) Charles Bielders (coord.) Pierre Defourny Guillaume Lobet Quentin Ponette Quentin Ponette (compensates Patrick Bogaert)	FR [q2] [47.5h+30h] [7 Credits]	x	
LBIRE2131	Environmental Impact Assessment : diagnosis and indicators	Charles Bielders (coord.) Pierre Defourny	FR [q2] [22.5h] [3 Credits]	x	

3 crédits à choisir parmi les unités d'enseignement suivantes : (3 credits)

L'étudiant·e des options 4E, 10E et 12E suit obligatoirement l'unité d'enseignement LBRTI2101A.

LBRTI2101A	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q2] [22.5h+15h] [3 Credits] > English-friendly	x	
LSTAT2110A	Analyse des données	Olivier Caelen	FR [q1] [15h+7.5h] [3 Credits]	x	

3 crédits à choisir parmi les unités d'enseignement suivantes : (3 credits)

L'étudiant·e de l'option 12E suit obligatoirement l'unité d'enseignement LBIRA2109.

LBIRA2109	Agrarian systems and farm	Guillaume Lobet	FR [q1] [30h+0h] [3 Credits] > English-friendly	x	

				Year 1	2
⊠ LENVI2007A	Renewable energy sources	Emmanuel De Jaeger Patrick Gerin Hervé Jeanmart	EN [q1] [30h] [3 Credits] *> French-friendly*	x	

Ethics (2 credits)

The students will opt firstly for the course LTECO2300. Two other choices are also available.

⊠ LTECO2100	Sociétés, cultures, religions : Biblical readings	Simon Naveau	FR [q1] [15h] [2 Credits]	x	x
⊠ LTECO2200	Societies-cultures-religions : Human Questions	Pedro Dusabamahoro Valinho Gomes	FR [q1] [15h] [2 Credits]	x	x
⊠ LTECO2300	Societies, cultures, religions : Ethical questions	Marcela Lobo Bustamante	FR [q1] [15h] [2 Credits]	x	x

Courses to be chosen for 5 credits (5 credits)

Sauf pour les étudiant·es qui cumulent l'option Data Science (10E) et le complément d'option Formation interdisciplinaire en entrepreneuriat (13E).

For 10 credits : either a socio-professional internship neither an alternative program that is related to the chosen option

Stage d'insertion socio-professionnelle ou unités d'enseignement à choisir dans le programme alternatif pour 10 crédits

⊠ LBIR2004	Masters Internship	Damien Debecker (coord.) Xavier Draye Carolin Mayer (compensates Anne-Laure Jacquemart)	FR [q2] [20h] [10 Credits] *> English-friendly*		x

⊠ Alternative program of the stage (10 credits)

6 crédits minimum à choisir parmi les unités d'enseignement suivantes à compléter par des unités d'enseignement au choix libre pour 4 crédits.

⊠ LBIR1381	Principles of Biorefining	Damien Debecker (coord.) Benoît Stenuit	EN [q1] [30h] [3 Credits] *> French-friendly*		x
⊠ LBIR2050	Challenges of sustainable development and transition	Valentin Couvreur Nathalie Delzenne Valérie Swaen (coord.)	FR [q2] [20h+10h] [5 Credits]		x
⊠ LBIRA2109	Agrarian systems and farm	Guillaume Lobet	FR [q1] [30h+0h] [3 Credits] *> English-friendly*		x
⊠ LBIRA2113	Systèmes alimentaires du Futur	Marleen Abdel Massih (compensates Laure-Alix Clerbaux) Philippe Baret (coord.)	FR [q2] [42.5h] [5 Credits]		x
⊠ LBRAT2104A	Land monitoring by advanced satellite remote sensing	Sophie Bontemps Pierre Defourny	EN [q2] [22.5h+15h] [3 Credits] *> French-friendly*		x
⊠ LBRES2101B	Smart technologies for environmental engineering	Sébastien Lambot	EN [q1] [22.5h+15h] [3 Credits] *> French-friendly*		x
⊠ LBRES2105	Soil erosion and conservation	Charles Bielders	EN [q2] [22.5h+22.5h] [4 Credits] *> French-friendly*		x
⊠ LBRTE2201	Human and environmental toxicology	Cathy Debier	EN [q1] [30h+7.5h] [4 Credits] *> French-friendly*		x
⊠ LCOMU2600	Scientific popularisation	Jerry Jacques	FR [q2] [30h] [5 Credits]		x
⊠ LDVLD1300	Ecological Economics	Kevin Marechal	FR [q1] [30h] [5 Credits]		x
⊠ LECGE1216	Growth and Development	Mélanie Lefèvre (compensates David De la Croix)	FR [q1] [30h] [5 Credits]		x
⊠ LECSO2330	Economie sociale et transition écologique et sociale	Anaïs Perilleux	FR [q2] [30h] [5 Credits]		x
⊠ LENVI2007A	Renewable energy sources	Emmanuel De Jaeger Patrick Gerin Hervé Jeanmart	EN [q1] [30h] [3 Credits] *> French-friendly*		x
⊠ LGCIV2073	Hydrogeology and Geoenvironment	Hadrien Rattez	EN [q1] [30h+15h] [5 Credits] *> French-friendly*		x
⊠ LMECA2711	Quality management and control.	Alexandre Debatty Laurence Guiot (coord.)	EN [q2] [30h+30h] [5 Credits] *> French-friendly*		x

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⊠ Unités d'enseignement au choix libre pour 4 crédits (4 credits)

PROFESSIONAL FOCUS [30.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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	Year 2
Content:					
L'étudiant·e qui choisit l'option INEO réalise son mémoire dans le cadre de la formation interdisciplinaire en création en entrepreneuriat et remplace l'activité LBIRE2210 par une activité au choix libre pour 3 crédits.					
LBIRE2200	Master thesis		FR [q1+q2] [] [27 Credits]		x
LBIRE2210	Master thesis' accompanying seminar	Patrick Bogaert	EN [q1+q2] [10h] [3 Credits] *> French-friendly*		x

OPTIONS

Students in this programme have a choice of 5 options followed by a complement to the chosen option in the second year of the programme.

Students who wish to take the INEO module have to enrol in their first year of the master programme. It will be considered however as a complement to the option chosen in the first year.

Students have also the opportunity to take optionnal courses either from a suggested list or from another programme at UCLouvain. In this case, the choice has to be validated by the Study Counsellor. Prior to that, the student must obtain an authorization from the lecturer of the course.

> Option 4E - Pollution management *[en-prog-2026-bire2m-lbire204o]*
> Complement to the option 4E : Pollution management *[en-prog-2026-bire2m-lbire214o]*
> Option 5E - Land Use Planning *[en-prog-2026-bire2m-lbire205o]*
> Option's complement 5E - Land Use Planning *[en-prog-2026-bire2m-lbire215o]*
> Option 7E- Water and Soil Resources *[en-prog-2026-bire2m-lbire207o]*
> Option's complement 7E - Water and soil resources *[en-prog-2026-bire2m-lbire217o]*
> Option 10E - Data science *[en-prog-2026-bire2m-lbire210o]*
> Option's complement - Data science *[en-prog-2026-bire2m-lbire111o]*
> Option 12E : Sustainability engineering *[en-prog-2026-bire2m-lbire212o]*
> Option's complement - Sustainability engineering *[en-prog-2026-bire2m-lbire120o]*
> Business Creation (13E) *[en-prog-2026-bire2m-lbire250o]*

OPTION 4E - POLLUTION MANAGEMENT [23.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

This option will be followed by the corresponding option complement OR by "the Business Creation".

Content:

				Year 1	Year 2
LBIR1346	Surface and colloid chemistry	Christine Dupont (coord.) Aurélien vander Straeten (compensates Christine Dupont)	FR [q2] [30h] [3 Credits]	x	
LBRES2101B	Smart technologies for environmental engineering	Sébastien Lambot	EN [q1] [22.5h+15h] [3 Credits] *> French-friendly*	x	
LBRES2103	Soil physics applied to Agronomy and Environment	Charles Bielders (coord.) Mathieu Javaux	FR [q1] [30h+15h] [4 Credits]	x	
LBRES2218A	Soil and water resources management and environmental technologies professional seminars	Charles Bielders Marnik Vanclooster	FR [q1] [20h+0h] [2 Credits]	x	x
LBRTE2102	Integrated exercises in environmental science and technology	Patrick Gerin (coord.) Mathieu Javaux Amaury Peeters (compensates Marnik Vanclooster)	FR [q1+q2] [45h+0h] [5 Credits] *> English-friendly*	x	
LBRTE2201	Human and environmental toxicology	Cathy Debier	EN [q1] [30h+7.5h] [4 Credits] *> French-friendly*		x
LBRTI2101B	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q2] [30h] [2 Credits] *> English-friendly*	x	

COMPLEMENT TO THE OPTION 4E : POLLUTION MANAGEMENT [20.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBIRC2109	Process engineering : unit operations	Damien Debecker	FR [q2] [52.5h+15h] [5 Credits] > English-friendly	x	
LBRES2102	Engineering of the water and the pollutants in grounds and groundwaters	Marnik Vanclooster	EN [q2] [22.5h+22.5h] [4 Credits] > French-friendly	x	

Integrated project : Option 4E (11 credits)

LBIRE2205B	Decision tools and project management - Project Management	Raphaël Amory Frédéric Gaspart	EN [q1] [15h] [1 Credits] > French-friendly		x
LBIRE2231	Projet intégré en gestion de la pollution	Yannick Agnan Pierre Delmelle (coord.)	FR [q1] [40h+8h] [6 Credits] > English-friendly		x
LBRTE2101	Applied hydro-biogeochemistry	Pierre Delmelle Patrick Gerin (coord.)	EN [q1] [30h+15h] [4 Credits] > French-friendly		x

OPTION 5E - LAND USE PLANNING [23.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBIRA2105	Agricultural and rural policies	Goedele Van den Broeck	EN [q1] [30h] [3 Credits] > French-friendly	x	
LBRAT2101	Suburban and rural space development	Pierre Defourny (coord.) Yves Hanin Marie Pairon	FR [q1] [45h+15h] [5 Credits]	x	
LBRAT2103	Sociology of the actors and the rural territories	Yves Hanin	FR [q2] [30h] [3 Credits]	x	
LBRAT2104A	Land monitoring by advanced satellite remote sensing	Sophie Bontemps Pierre Defourny	EN [q2] [22.5h+15h] [3 Credits] > French-friendly	x	
LICAR2901A	Law on built and unbuilt areas		FR [q1] [25h] [2 Credits]	x	
LURBA2960	Mobility, urbanism and territorial development	Xavier Tackoen	FR [q1] [30h] [3 Credits]	x	

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Courses to be chosen for 4 credits minimum (4 credits)

LBRAT2104B	Land monitoring by advanced satellite remote sensing - Sustainable food production monitoring	Sophie Bontemps Pierre Defourny	EN [q2] [7.5h+7.5h] [1 Credits] *> French-friendly*		x
LBRES2105	Soil erosion and conservation	Charles Bielders	EN [q2] [22.5h+22.5h] [4 Credits] *> French-friendly*		x
LBRES2204	Integrated water management of water resources	Marnik Vanclooster	FR [q1] [22.5h+22.5h] [4 Credits]		x
LBRES2206	Advanced Hydrology for Engineers	Mathieu Javaux	EN [q1] [22.5h+15h] [3 Credits] *> French-friendly*		x
LENVI2011	Environmental assessment and management methods	Clémentine Prouteau	FR [q2] [30h] [3 Credits]		x

OPTION'S COMPLEMENT 5E - LAND USE PLANNING [20.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBIRF2106	Analyse et gestion des habitats et des espèces	Cécile Renier (compensates Anne-Laure Jacquemart)	FR [q2] [30h+22.5h] [5 Credits]	x	
LBRAT2102	Spatial modelling of land dynamics	Barbara Stinglhamber (compensates Pierre Defourny)	EN [q2] [15h+15h] [3 Credits] *> French-friendly*	x	

Projet intégré en aménagement du territoire (9 credits)

LBIRE2232	Projet intégré en aménagement du territoire	Pierre Defourny (coord.) Marie Pairon (compensates Anne-Laure Jacquemart)	FR [q1] [47.5h+15.5h] [9 Credits]		x

3 crédits minimum à choisir parmi les unités d'enseignement suivantes : (3 credits)

LBIRF2213	Fieldtrip - Forests, natural areas and land use	Quentin Ponette (coord.) Caroline Vincke	FR [q2] [30h] [2 Credits] *> English-friendly*		x
LBRAI2214	Survey and interactions with stakeholders for transition in rural and tropical areas	Philippe Baret Pierre Defourny (coord.)	FR [q1] [15h+15h] [3 Credits]		x
LBRAT2104B	Land monitoring by advanced satellite remote sensing - Sustainable food production monitoring	Sophie Bontemps Pierre Defourny	EN [q2] [7.5h+7.5h] [1 Credits] *> French-friendly*		x
LENVI2007A	Renewable energy sources	Emmanuel De Jaeger Patrick Gerin Hervé Jeanmart	EN [q1] [30h] [3 Credits] *> French-friendly*		x
LURBA2001	Applied town and country planning law	Bertrand Ippersiel Christophe Thiebaut	FR [q1] [30h] [3 Credits]		x

OPTION 7E- WATER AND SOIL RESOURCES [23.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBRES2101B	Smart technologies for environmental engineering	Sébastien Lambot	EN [q1] [22.5h+15h] [3 Credits] *> French-friendly*	x	
LBRES2103	Soil physics applied to Agronomy and Environment	Charles Bielders (coord.) Mathieu Javaux	FR [q1] [30h+15h] [4 Credits]	x	
LBRES2104	IRRIGATION AND DRAINAGE	Mathieu Javaux	FR [q2] [22.5h+22.5h] [4 Credits]	x	
LBRES2105	Soil erosion and conservation	Charles Bielders	EN [q2] [22.5h+22.5h] [4 Credits] *> French-friendly*	x	
LBRES2204	Integrated water management of water resources	Marnik Vanclooster	FR [q1] [22.5h+22.5h] [4 Credits]		x
LBRTE2101	Applied hydro-biogeochemistry	Pierre Delmelle Patrick Gerin (coord.)	EN [q1] [30h+15h] [4 Credits] *> French-friendly*	x	

OPTION'S COMPLEMENT 7E - WATER AND SOIL RESOURCES [20.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content: (20 credits)

				Year 1	Year 2
LBRES2102	Engineering of the water and the pollutants in grounds and groundwaters	Marnik Vanclooster	EN [q2] [22.5h+22.5h] [4 Credits] *> French-friendly*	x	
LBRES2203	Soil management in tropical and subtropical regions	Charles Bielders (coord.) Pierre Delmelle	FR [q2] [22.5h+7.5h] [3 Credits]	x	
LBRES2218	Soil and water resources management and environmental technologies professional seminars + excursion	Charles Bielders Marnik Vanclooster (coord.)	FR [q1+q2] [22.5h+15h] [3 Credits]	x	x

Projet intégré en ressources en eau et sol (10 credits)

LBIRE2205B	Decision tools and project management - Project Management	Raphaël Amory Frédéric Gaspart	EN [q1] [15h] [1 Credits] *> French-friendly*		x
LBIRE2233	Integrated project in water and soil resources management	Charles Bielders (coord.) Mathieu Javaux Marnik Vanclooster	FR [q1] [40h+8h] [6 Credits]		x
LBRES2206	Advanced Hydrology for Engineers	Mathieu Javaux	EN [q1] [22.5h+15h] [3 Credits] *> French-friendly*		x

OPTION 10E - DATA SCIENCE [28.0]

- O Mandatory
- ⊠ Optional
- △ Not offered in 2026-2027
- ⊘ Not offered in 2026-2027 but offered the following year
- ⊕ Offered in 2026-2027 but not the following year
- △ ⊕ Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
O LBRAI2219	Systems Biology Modelling	Xavier Draye (coord.) Mathieu Javaux Guillaume Lobet	FR [q2] [30h] [3 Credits] > English-friendly	x	
O LBRAT2102	Spatial modelling of land dynamics	Barbara Stinglhamber (compensates Pierre Defourny)	EN [q2] [15h+15h] [3 Credits] > French-friendly	x	
O LBRTI2101B	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q2] [30h] [2 Credits] > English-friendly	x	
O LELEC2870	Machine learning : regression, deep networks and dimensionality reduction	John Lee Michel Verleysen	EN [q1] [30h+30h] [5 Credits] > French-friendly	x	
O LINFO1104	Programming language concepts	Quentin Stiévenart	FR [q2] [30h+30h] [5 Credits]	x	
O LSTAT2110A	Analyse des données	Olivier Caelen	FR [q1] [15h+7.5h] [3 Credits]	x	

Courses to be chosen for 7 credits minimum (7 credits)

				Year 1	Year 2
⊠ LBIRA2110B	Statistical analysis of multivariate data - Applied Econometrics	Xavier Draye Frédéric Gaspart Laura Symul	FR [q1] [27.5h+7.5h] [3 Credits] > English-friendly		x
⊠ LBRAT2104A	Land monitoring by advanced satellite remote sensing	Sophie Bontemps Pierre Defourny	EN [q2] [22.5h+15h] [3 Credits] > French-friendly		x
⊠ LBRAT2104B	Land monitoring by advanced satellite remote sensing - Sustainable food production monitoring	Sophie Bontemps Pierre Defourny	EN [q2] [7.5h+7.5h] [1 Credits] > French-friendly		x
⊠ LDATS2350	Hands-on data science with Python	Olivier Caelen Cédric Heuchenne	EN [q2] [30h+15h] [5 Credits]		x
⊠ LINFO2147	Communication networks	Cristel Pelsser	EN [q1] [30h+15h] [5 Credits] > French-friendly		x
⊠ LINFO2172	Databases	Samuel Hiard	EN [q2] [30h+30h] [5 Credits] > French-friendly		x
⊠ LINFO2275	Reinforcement Learning: Algorithms and Applications	Quentin Cappart Eric Piette	EN [q2] [30h+15h] [5 Credits] > French-friendly		x
⊠ LINMA2472	Algorithms in data science	Vincent Blondel Benoît Legat	EN [q1] [30h+22.5h] [5 Credits] > French-friendly		x
⊠ LPHYS2162	Introduction to the physics of the climate system and its modelling	Hugues Goosse François Massonnet	EN [q1] [22.5h+22.5h] [5 Credits] > French-friendly		x
⊠ LSTAT2320	Design of experiment.	Catherine Rasse Laura Symul	FR [q2] [30h+9.5h] [5 Credits] > English-friendly		x

OPTION'S COMPLEMENT - DATA SCIENCE [15.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBRTI2102	Process-based modelling in bioscience engineering	Emmanuel Hanert	EN [q1] [30h+15h] [5 Credits] > French-friendly	x	

Projet intégré en Data science (10 credits)

LBIRE2205B	Decision tools and project management - Project Management	Raphaël Amory Frédéric Gaspart	EN [q1] [15h] [1 Credits] > French-friendly		x
LBIRE2234	Data Science project	Patrick Bogaert (coord.) Emmanuel Hanert	EN [q1] [40h+8h] [6 Credits] > French-friendly		x
LCOMU2600	Scientific popularisation	Jerry Jacques	FR [q2] [30h] [3 Credits]		x

OPTION 12E : SUSTAINABILITY ENGINEERING [23.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBRAI2213	Impact evaluation in agriculture	Goedele Van den Broeck	EN [q2] [30h+8h] [4 Credits] > French-friendly	x	
LBRES2101	Smart technologies for environmental engineering	Sébastien Lambot	EN [q1] [32.5h+20h] [4 Credits] > French-friendly		x
LBRTI2101B	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q2] [30h] [2 Credits] > English-friendly	x	
LENVI2007A	Renewable energy sources	Emmanuel De Jaeger Patrick Gerin Hervé Jeanmart	EN [q1] [30h] [3 Credits] > French-friendly	x	

Unité d'enseignement obligatoire pour l'étudiant·e qui ne l'aurait pas créditée en Bachelier (2 credits)

LBIR1325B	Transfer of fluids and energy for Bio-engineer - Partim B : Case studies	Romain Debroeyer Mathieu Javaux Marnik Vanclooster	FR [q2] [5h+25h] [2 Credits]	x	

Courses to be chosen for 10 credits minimum (10 credits)

L'étudiant e inscrit·e à l'unité d'enseignement LBIR1325B (2 crédits) choisit 8 crédits minimum parmi les unités d'enseignement suivantes :

				Year 1	2
⊠ LBIRC2109A	Process engineering: Unit operations	Damien Debecker	EN [q2] [30h+7.5h] [3 Credits] > English-friendly	x	x
⊠ LBRAT2102	Spatial modelling of land dynamics	Barbara Stinglhamber (compensates Pierre Defourny)	EN [q2] [15h+15h] [3 Credits] > French-friendly	x	x
⊠ LBRAT2104A	Land monitoring by advanced satellite remote sensing	Sophie Bontemps Pierre Defourny	EN [q2] [22.5h+15h] [3 Credits] > French-friendly	x	x
⊠ LBRES2204	Integrated water management of water resources	Marnik Vanclooster	EN [q1] [22.5h+22.5h] [4 Credits]	x	x
⊠ LBRTE2201	Human and environmental toxicology	Cathy Debier	EN [q1] [30h+7.5h] [4 Credits] > French-friendly	x	x
⊠ LINFO2275	Reinforcement Learning: Algorithms and Applications	Quentin Cappart Eric Piette	EN [q2] [30h+15h] [5 Credits] > French-friendly	x	x
⊠ LPHYS2162	Introduction to the physics of the climate system and its modelling	Hugues Goosse François Massonnet	EN [q1] [22.5h+22.5h] [5 Credits] > French-friendly	x	x
⊠ LPHYS2268	Forecast, prediction and projection in climate science	Hugues Goosse François Massonnet	EN [q2] [22.5h+7.5h] [5 Credits] > French-friendly	x	x

OPTION'S COMPLEMENT - SUSTAINABILITY ENGINEERING [20.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LBRTI2102	Process-based modelling in bioscience engineering	Emmanuel Hanert	EN [q1] [30h+15h] [5 Credits] *> French-friendly*	x	
LELME2420	Energetics.	Francesco Contino Francesco Contino (compensates Hervé Jeanmart)	EN [q2] [30h+15h] [5 Credits] *> French-friendly*	x	

Projet intégré pour l'option 12A (10 credits)

LBIRE2205B	Decision tools and project management - Project Management	Raphaël Amory Frédéric Gaspart	EN [q1] [15h] [1 Credits] *> French-friendly*		x
LBIRE2235	Innovative system management for sustainability	Francesco Contino Mathieu Javaux (coord.) Goedele Van den Broeck	EN [q1] [22.5h+7.5h] [3 Credits] *> French-friendly*		x
LBIRE2236	Sustainability Engineering project	Francesco Contino Hélène Defourny (compensates Pierre Defourny) Mathieu Javaux (coord.) Goedele Van den Broeck	EN [q1] [40h+8h] [6 Credits] *> French-friendly*		x

BUSINESS CREATION (13E) [20.0]

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Content:

				Year 1	Year 2
LINEO2001	Théorie de l'entrepreneuriat	Frank Janssen	EN [q1] [30h+20h] [5 Credits]	x	
LINEO2002	Aspects juridiques, économiques et managériaux de la création d'entreprise	Yves De Cordt Emilie Lubukayi Tshibuabua Ngalula	EN [q1] [30h+15h] [5 Credits]	x	
LINEO2003	Plan d'affaires et étapes-clefs de la création d'entreprise	Frank Janssen	EN [q2] [30h+15h] [5 Credits]		x
LINEO2004	Séminaire d'approfondissement en entrepreneuriat	Frank Janssen	EN [q2] [30h+15h] [5 Credits]	x	

Supplementary classes

To access this Master, students must have a good command of certain subjects. If this is not the case, in the first annual block of their Masters programme, students must take supplementary classes chosen by the faculty to satisfy course prerequisites.

- Mandatory
- Optional
- Not offered in 2026-2027
- Not offered in 2026-2027 but offered the following year
- Offered in 2026-2027 but not the following year
- Not offered in 2026-2027 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...)

Unités d'enseignement passerelle pour le master Bioingénieur en sciences et technologies de l'environnemnt ET Bioingénieur en gestion des forêts et des espaces naturels (44 credits)

LANGL2480	English Communication Skills for Bioengineers	Ahmed Adrioueche Ariane Halleux Philippe Neyt Katherine Opello Charlotte Peters (coord.) Adrien Pham	EN [q2] [30h] [2 Credits] *> French-friendly*
LBIR1315	Probability and statistics II	Patrick Bogaert	FR [q1] [22.5h+22.5h] [3 Credits]
LBIR1325A	Transfer of fluids and energy for Bio-engineer - Partim A	Romain Debroeyer Mathieu Javaux Marnik Vanclooster	FR [q1] [37.5h+27.5h] [5 Credits]
LBIR1325B	Transfer of fluids and energy for Bio-engineer - Partim B : Case studies	Romain Debroeyer Mathieu Javaux Marnik Vanclooster	FR [q2] [5h+25h] [2 Credits]
LBIR1328	Climatology and hydrology applied to agronomy and the environment	Charles Bielders (coord.) Hugues Goosse Marnik Vanclooster	EN [q1] [45h+22.5h] [6 Credits] *> French-friendly*
LBIR1334	Introduction to forest science	Quentin Ponette (coord.) Caroline Vincke	FR [q2] [22.5h+15h] [3 Credits] *> English-friendly*
LBIR1336	Soil science and integrated excursions	Yannick Agnan (coord.) Richard Lambert Caroline Vincke	FR [q2] [30h+37.5h] [5 Credits] *> English-friendly*
LBIR1349	Analytical Chemistry I	Christine Dupont (coord.) Yann Garcia Yann Garcia (compensates Christine Dupont)	FR [q1] [30h+15h] [3 Credits]
LBIR1350	General Microbiology	Annika Gillis	FR [q2] [37.5h+15h] [4 Credits]
LBIR1351	Introduction to systems analysis	Philippe Baret	FR [q1] [10h+20h] [3 Credits]
LBIR1354	Biologie des interactions	Anne-Laure Jacquemart (coord.) Anne Legrève Carolin Mayer (compensates Anne-Laure Jacquemart)	FR [q2] [22.5h+15h] [3 Credits]
LBIR1360	Firm management and organisation	François Heroufosse	EN [q1] [30h+7.5h] [3 Credits] *> French-friendly*
LBIR1362	Environmental Economics	Frédéric Gaspart	FR [q2] [30h+7.5h] [3 Credits]

Unités d'enseignement spécifiques (4 credits)

LBIR1260	Principles of economics	Goedele Van den Broeck	EN [q1] [30h+15h] [4 Credits] *> French-friendly*

Course prerequisites

There are no prerequisites between course units (CUs) for this programme, i.e. the programme activity (course unit, CU) whose learning outcomes are to be certified and the corresponding credits awarded by the jury before registration in another CU.

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

BIRE2M - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the higher education landscape and the academic organisation of courses.

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

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

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

SUMMARY

- > General access requirements
- > Specific access requirements
- > University Bachelors
- > Non university Bachelors
- > Holders of a 2nd cycle University degree
- > Holders of a non-University 2nd cycle degree
- > Access based on validation of professional experience
- > Access based on application
- > Admission and Enrolment Procedures for general registration

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Bioengineering	Additionnal module in Environment	Direct access	
Autre Bachelier UCL du domaine des sciences et technologies		Access based on application	Le/la futur·e étudiant·e rencontrera obligatoirement le Conseiller aux études pour déterminer le programme à suivre.
Others Bachelors of the French speaking Community of Belgium			
Bachelier en sciences de l'ingénieur, orientation bioingénieur		Direct access	Enseignements supplémentaires à déterminer selon le programme suivi antérieurement (max.15 crédits). Prendre obligatoirement contact avec le Conseiller aux études .
		Access based on application	
Bachelors of the Dutch speaking Community of Belgium			
Bachelor of Science in de bio-ingenieurswetenschappen		Direct access	Enseignements supplémentaires à déterminer selon le programme suivi antérieurement (max.15 crédits). Prendre obligatoirement contact avec le Conseiller aux études .
		Access based on application	
Foreign Bachelors			
Bachelier en sciences de l'ingénieur, orientation bioingénieur		Access based on application	Sous réserve d'acceptation du dossier. Enseignements supplémentaires à déterminer selon le programme

		suivi antérieurement (max.60 crédits). Prendre obligatoirement contact avec le Conseiller aux études .

Non university Bachelors

> Find out more about links to the university

Diploma	Access	Remarks
BA en agronomie, orientation agro-industries et biotechnologies - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation agronomie des régions chaudes - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation environnement - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation forêt et nature - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation systèmes alimentaires durables et locaux - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion agricoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion horticoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation technologie animalière - crédits supplémentaires entre 45 et 60 BA en chimie, orientation biochimie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation biotechnologie - crédits supplémentaires entre 45 et 60 BA en chimie, orientation chimie appliquée - crédits supplémentaires entre 45 et 60 BA en chimie, orientation environnement - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire .	Type court

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
Masters			
Master Bioingénieur (autre finalité que sciences et technologies de l'environnement) Master en sciences biologiques Master en Biochimie et biologie moléculaire et cellulaire Master en Biologie des organismes et écologie Master en sciences chimiques Master en Sciences géographiques		Access based on application	
		Access based on application	
		Access based on application	

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.

Admission and Enrolment Procedures for general registration

Teaching method

The overall structure of the programmes for the Bachelor of Science in Engineering (Bioengineering) and the Master in Bioengineering clearly reflect the

concepts of specialization, gradual choice and individualization of the courses.

1st cycle (Bachelor) :

- programme designed for the BIR students starting from Year 1
- special programme in second year for all the BIR students
- distinct programme with 30 credits for option courses in third year : three advanced subsidiary subjects available : chemistry , agronomy , environment.

2nd cycle (Master) :

- choice of four Masters in Bioengineering with a professional focus, together with a number of options which partly overlap, optional subjects (either free choice or from the lists) and a final individual dissertation.

  This overall structure gives students the opportunity to have a highly individualized programme whilst at the same time retaining both the **comprehensive nature** of the training and the foundation elements of university education : **independence, competence** , **open-mindedness and interest in research** .

The options, which partly overlap at the level of the four Masters in Bioengineering, correspond to fields of activity identified on the basis of a wide-ranging survey of graduates of the Faculty working professionally and of contacts with potential employers.

The interdisciplinarity and the integrated approach are key dimensions in the training of **bioengineers in environmental science and technology** . This is reflected by :

- availability of courses organized by other faculties ;
- grouping of training activities : combined exercises, joint project, analysis of real situations, simulations ;
- the perception, analysis, diagnosis and content of the course specifications (e.g. management, remediation and development) combine different kinds of tools (e.g. field observation, laboratory analysis, databases and information systems) and various scales in space (e.g. from the molecular to the hydrographic basin or from a region to a sub-continent) and in time ;
- teaching teams with a wide range of expertise ;
- learning how best to work in groups of students to develop a real, independent capacity for intellectual work.

Training for research. through research, which is essential for conceptual and innovative awareness and developing intellectual rigour, is reflected by different types of activities :

- producing a final dissertation and taking part in dissertation seminars ;
- participation in subject seminars providing direct contact with young researchers working in the field of environment science and land development;
- presentation of seminars by students from an outside research group or groups and the production of a dissertation.

The application of skills, knowledge and techniques that students have acquired and how they use them together is taken into account in an integrated project in environmental science and technology. This is an important learning activity supplements the dissertation which, in the view of the Faculty, remains the most important part of training for research.

Through the close connection between the teaching and research, the development of new tools and new approaches is the subject of advanced training from the beginning of the 2nd cycle and is therefore central to this Master programme. All this enables graduates of this programme to be able to make rapid use of new techniques and approaches in their early professional experience.

Evaluation

The evaluation methods comply with the Academic regulations and procedures . More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Students are assessed according to the activities in the programme : this can take the form of written and/or oral examinations as well as individual and/or group work.

Further details about how the assessment is done can be found in the course specifications.

Mobility and/or Internationalisation outlook

Students enrolled in the Bioengineering Master's program have access to various mobility opportunities:

- ERASMUS mobility: Students have the opportunity to take part in a one-semester exchange program at a partner university in Europe or outside Europe. The exchange takes place during the first year of the Master's cycle (note that the selection process occurs during the third year of the Bachelor's program). The ERASMUS mobility rate varies between 30% and 40% depending on the year.
- Mobility for the Master's internship: Master's students have the option to replace courses worth 10 ECTS credits with an internship which can be carried out abroad.

- Mobility for the Master's thesis: During the second year of the Master's cycle, and dependent on the thesis topic, students may go abroad to conduct fieldwork and collect data for the completion of their final thesis.

In addition to these opportunities, students may also take part in study trips abroad or interact with professors from other universities as part of certain courses.

Possible trainings at the end of the programme

The Master in Bioengineering programme follows on directly from the Bachelor in Engineering Science : Bioengineering with an option course in Environment. Successful completion of this programme enables direct entry to other training programmes in the second and third cycles.

- **Advanced Masters** : The Advanced Masters in the filed authorized by regulations in addition to those established by the ARES-CCD
- **Doctoral programmes** : doctorates in Agronomic Sciences and Biological Engineering.

Contacts

Curriculum Management

Faculty

Structure entity	SST/AGRO
Denomination	Faculty of bioscience engineering (AGRO)
Sector	Sciences and Technology (SST)
Acronym	AGRO
Postal address	Croix du Sud 2 - bte L7.05.01 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 37 19 - Fax: +32 (0) 10 47 47 45
Website	http://www.uclouvain.be/agro

Mandate(s)

- Dean : Christine Dupont
- Administrative director : Carole Dekelver

Commission(s) of programme

- Commission de programme - Master Bioingénieur-Sciences agronomiques (BIRA)
- Commission de programme - Master Bioingénieur-Chimie et bioindustries (BIRC)
- Commission de programme - Master Bioingénieur-Sciences & technologies de l'environnement (BIRE)
- Commission de programme - Bachelier en sciences de l'ingénieur, orientation bioingénieur (CBIR)
- Commission de programme interfacultaire en Sciences et gestion de l'environnement (ENVI)
- Fermes universitaires de Louvain (FERM)

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