







- Temperate and tropical forestry
- Management of forests and natural areas
- Land management

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

- Ecosystems and biodiversity
- Forest and society
- Tropical forestry and development
- Information analysis and management in agricultural engineering

2.3 To master the operational use of specialised tools in engineering sciences (e.g.: systems analysis, statistical analysis, programming, modelling, etc.)<sup>[1]</sup>:

- Measurement techniques
- 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 field of forest science by incorporating long-term processes at different scales ranging from the tree 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.

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[1] The tools are explained on the basis of the radioscopia of the programme and courses.

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.



The sixteen elective modules, 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.

Year 1:

- first part of the compulsory common core curriculum (25 credits),
- compulsory professional focus programme (30 credits),
- choice of one elective module (15 credits) from a list of five. At least 5 credits of this module should be taken during the first year. Certain optional courses may be organised in collaboration with the three other Masters in Bioengineering.

NB: Enrolment in the additional interdisciplinary training module in "Business Creation" is not automatic. In order to enrol, students must submit their application to the coordinators of the Business Creation programme and participate in the selection process.

Year 2:

- remainder of the compulsory common core curriculum (50 credits),
- remainder of the elective module (10 credits)

*Additional training "Business Creation"*

The interdisciplinary training in "Business Creation" is one of the elective modules proposed within the framework of the Master in Forestry and Natural Areas. However, since this module is worth 20 credits (instead of the 15 credits provided for an elective module), some modifications of the common core curriculum are required.

This module **must be taken as of the first year of this Master's programme**

Enrolment is not automatic. In order to enrol, students must apply for admission and participate in a selection process. Only after having received the permission to participate in this programme may students contact the academic secretary to establish their personal course programme and plan the distribution of their courses over the two years of their Master's programme.

This additional programme features in the Master programmes of various faculties (Bioengineering, Law, Business Management, Civil Engineering and Psychology). It is designed to provide students, as potential creators, with the tools for analysis and understanding which will help them appreciate how entrepreneurship works when creating or taking on a business and develop projects of this kind within existing organizations.

In addition, this training enables students to gain familiarity with other disciplines and to learn how to work in multidisciplinary teams.

For further information on this training programme, please refer to: <https://uclouvain.be/fr/etudier/ineo>

## BIRF2M Programme

### Detailed programme by subject

#### CORE COURSES [75.0]

- 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

○ LBIRF2200

Mémoire de fin d'études

(FR) [q1+q2] [ ] [27 Credits] ⊗

				Year	
				1	2
○ LBIRF2103	Wood anatomy and properties	Hugues Frère (compensates Caroline Vincke) Caroline Vincke (coord.)	EN [q1] [30h+30h] [5 Credits]  > English-friendly	x	
○ LBIRF2105	Silviculture and dendrology	Quentin Ponette			

**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:**

○ LBIRE2104	Applied soil sciences	Yannick Agnan Pierre Delmelle (coord.)	FR [q1] [22.5h+22.5h] [4 Credits] 🌐 > English-friendly		X
○ LBIRF2102	Wood industry and technology	Hugues Frère (compensates Caroline Vincke) Caroline Vincke (coord.)	FR [q2] [30h+7.5h] [4 Credits] 🌐		X
○ LBIRF2104	Forest ecology and health	Claude Bragard Anne Legrève Quentin Ponette Caroline Vincke (coord.)	FR [q2] [45h] [4 Credits] 🌐 > English-friendly		X

**o Projet disciplinaire (10 credits)**

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

**o Projet intégré (8 credits)**

⊗ **Projet intégré pour les options 5F, 7F, 10F, 13F, 16F et 17F (8 credits)**

○ LBIRF2202	Multifunctional forest management	Quentin Ponette	FR [q1] [15h+15h] [3 Credits] 🌐 > English-friendly		
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## OPTIONS [15.0]

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L'option en Entrepreneuriat (INEO) est une formation interdisciplinaire et interfacultaire (EPL, AGRO, IEPR, PSP, DROIT, IAG-LSM, SC) qui totalise des activités pour 20 crédits, nécessitant un aménagement du programme de cours du tronc commun.

Elle doit être choisie dès la première année et nécessite la participation à une sélection conformément aux règles établies par les responsables du programme INEO. Ce n'est qu'après avoir reçu l'accord de participation à ce programme que les étudiants devront prendre contact avec le vice-doyen pour aménager leur programme de cours personnel et répartir les cours INEO sur les deux années du master.

- > [Option 5F](#) [ en-prog-2024-birf2m-lbirf201o ]
- > [Option 7F](#) [ en-prog-2024-birf2m-lbirf202o ]
- > [Option 10F - Data science](#) [ en-prog-2024-birf2m-lbirf204o ]
- > [Option 12F : Sustainability engineering](#) [ en-prog-2024-birf2m-lbirf207o ]
- > [Business Creation \(Option 13F\)](#) [ en-prog-2024-birf2m-lbirf205o ]
- > [Option 16F](#) [ en-prog-2024-birf2m-lbirf203o ]
- > [Option 17F](#) [ en-prog-2024-birf2m-lbirf206o ]

## OPTION 5F [15.0]

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- 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, ...)

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

Year

## OPTION 7F [15.0]

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- 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, ...)

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



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***OPTION 16F [15.0]***

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○ LBIR1325B	Transfer of fluids and energy for Bio-engineer	Yann Bartosiewicz Quentin Goor (compensates) Mathieu Javaux Marnik Vanclooster	FR [q2] [0h+30h] [2 Credits] 🌐
○ LBIR1328	Climatology and hydrology applied to agronomy and the environment	Alice Alonso (coord.) Charles Bielders (coord.) Hugues Goosse	FR [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	FR [q2] [22.5h+15h] [3 Credits] 🌐
		Pierre De Muelenaere	FR [q1] [30h+7.5h] [3 Credits] 🌐 > French-friendly
		Frédéric Gaspart	FR [q2] [30h+7.5h] [3 Credits] 🌐
		Goedele Van den Broeck	FR [q1] [30h+15h] [4 Credits] 🌐 > French-friendly



## Course prerequisites

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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

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For each UCLouvain training programme, a [reference framework of learning outcomes](#) specifies 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.

## BIRF2M - 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](#)
- > [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
<b>UCLouvain Bachelors</b>			
<a href="#">Bachelor in Bioengineering</a>		Direct access	
Autre Bachelier du domaine des sciences et technologies		<a href="#">Access based on application</a>	Le ou la futur-e étudiant-e

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

## Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
<b>"Licenciés"</b>			

### Masters

Master Bioingénieur : sciences et technologies de l'environnement

[Access based on application](#)

[Access based on application](#)

[Access based on application](#)

## 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

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The interdisciplinary nature, integrated approach and the ability to reason on long-term issues are key dimensions in the training of **bioengineers in forests and natural areas**. This is reflected by:

- grouping of training activities: combined exercises, joint projects, case studies, weekly excursions, forestry tour (a one week study trip in Belgium and/or abroad), visits to companies;
- the integration of various approaches and tools (field observations, laboratory analyses, data bases, information systems, permanent experimental plots, ...), on different spatial scales (from a tree to a catchment basin, from a regional level to a sub-continental level) and temporal scales;
- student teamwork, training students to share their skills;
- the transversal educational offer (organized by other faculties).

### **A full array of pedagogical tools is placed at the students' disposal.**

The Louvain-la-Neuve campus includes a 200 ha forest which is owned by UCL: the Bois de Lauzelle. The forest serves as a model for the scientific, pedagogical, economical, ecological and recreational functions of a wood. Several special devices have been put in place in the Bois de Lauzelle that are used both for its daily management as well as for educational purposes. An example is the simulation area for the marking of trees, which, combined with a computer programme, allows to analyse the effects of the choices made during the process; but also a permanent inventory device for ligneous resources. Students learn to recognise ligneous species more easily thanks to the diversity of the species present on the site, both in the Bois de Lauzelle and in town. Students also have access to an arboretum of coniferous species.

The Forestry Department also manages various experimental devices in the Walloon and Brussels regions. These provide students with the opportunity to train themselves in the understanding and management of forest ecosystems.

A decentralised field laboratory, the "Centre de développement Agro-Forestier (CDAF)", conducts applied research on trees and forests. Situated in Chimay, the laboratory gives access to a great diversity of natural environments. It also accommodates students in the framework of internships and dissertations.

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 within the research groups, during their master dissertation.

The application of skills, knowledge and techniques that students have acquired and how they use them together is taken into account

This mobility should increase given the harmonization of education at the European level and the conclusion of new partnership agreements outside ERASMUS as well as membership of thematic networks. The AGRO Faculty is also a member of the ATHENS network.

The Master in Forests and Natural Areas proposes privileged exchanges with the following institutions:

- 1.

