UCLouvain

BIRF2M

2024 - 2025

BIRF2M - Introduction

Introduction

BIRF2M - Teaching profile

Learning outcomes

Master in Forests and Natural Areas 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.

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

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:

				Year 1	2
LBIRF2103	Wood anatomy and properties	Hugues Frère (compensates Caroline Vincke) Caroline Vincke (coord.)	FR [q1] [30h+30h] [5 Credits] *> English-friendly*	x	
LBIRF2105	Silviculture and dendrology	Quentin Ponette	FR [q1] [30h+52.5h] [6 Credits] *> English-friendly*	x	
LBIRF2106	Analyse et gestion des habitats et des espèces	Anne-Laure Jacquemart (coord.) Marie Pairon	FR [q2] [30h+22.5h] [5 Credits]	x	
LBIRF2201	Forest economics and engineering	Valéry Bemelmans (compensates Caroline Vincke) Mathieu Jonard (coord.)	FR [q2] [37.5h] [3 Credits]	x	
LBIRF2204	Tropical forestry and international forestry challenges	Christine Farcy (coord.)	FR [q1] [37.5h] [3 Credits] ∅	x	x
LBIRF2213	Fieldtrip - Forests, natural areas and land use	Quentin Ponette (coord.) Caroline Vincke	FR [q2] [30h] [2 Credits] *> English-friendly*		x
LBRAT2101B	Aménagement du territoire: Principes	Pierre Defourny Yves Hanin Marie Pairon	FR [q1] [45h] [3 Credits]	x	

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

Courses to be chosen for 3 credits minimum

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	
LBRTI2101A	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q1] [22.5h+15h] [3 Credits] *> English-friendly*	x	

Ethics (2 credits)

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

OPTIONS [15.0]

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 [15.0]

- 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

Content:

LBRAT2101C	

OPTION 10F - DATA SCIENCE [15.0]

- 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, ...)

OPTION 12F : SUSTAINABILITY ENGINEERING [15.0]

- O 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...)

Content:

				Year 1	Year 2
O LBIRE2205A	Decision tools and project management - Decision tools	Raphaël Amory Frédéric Gaspart	EN [q1] [22.5h+7.5h] [3 Credits] *> French-friendly*	x	
O LBIRE2235	Innovative system management for sustainability	Benjamin Berger (compensates Francesco Contino) Quentin Goor (compensates Mathieu Javaux) Mathieu Javaux (coord.) Goedele Van den Broeck	EN [q1] [22.5h+7.5h] [3 Credits] *> French-friendly*		x
O LBRES2101	Smart technologies for environmental engineering	Sébastien Lambot	EN [q1] [32.5h+20h] [4 Credits] *> French-friendly*		x
O LBRTI2102	Process-based modelling in bioscience engineering	Emmanuel Hanert	EN [q1] [30h+15h] [5 Credits] *> French-friendly*		x

BUSINESS CREATION (OPTION 13F) [20.0]

- O 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...)

When chosen, the students are exempted from two courses among the mandatory courses: BIRE2210 and BIRE2106A. Access is limited via a selection process when entering the master (https://uclouvain.be/fr/etudier/ineo).

	Year 1	Year 2

[FR] [q1] [30h+15h] [5 Credits]

OPTION 16F [15.0]

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	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	FR [q2] [22.5h+15h] [3 Credits]
LBIR1360	Firm management and organisation	Pierre De Muelenaere	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 (11 credits)

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

Courses to be chosen for 7 credits (7 credits)
Activités au choix libre dans l'un des programmes de bachelier du Secteur des Sciences et Technologies : https://uclouvain.be/fr/etudier/les-facultes.html
Minimum 7 credit(s)

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.

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

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Bioengineering		Direct access	
Autre Bachelier du domaine des sciences et technologies		Access based on application	Le ou la futur·e étudiant·e rencontrera obligatoirement le Conseiller aux études qui examinera son dossier.
Others Bachelors of the French speaking Community of Belgium			
Tous les bacheliers de la CfB		Direct access	
		Access based on application	
Bachelors of the Dutch speaking Community of Belgium			
		Direct access	
		Access based on application	
Foreign Bachelors			
		Access based on application	
		Access based on application	

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	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire.	Type court

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
"Licenciés"			
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

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 devises 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 in the realisation of an integrated project as well as during the "forestry tour". This one week field trip during the second year, allows students to gain practical experience. These are important learning activities in addition to the realisation of a 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 regulations concerning studies and exams. More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Students are assessed according to the regulations of the programme and 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

The Master in Forests and Natural Areas offers a wide range of opportunities to study at other institutions, in Belgium, Europe and elsewhere.

The Faculty would like to highlight the strengths of this programme, particularly the potential for research and the fact that it is very much a part of a comprehensive University. The shape of the elective modules available has also been influenced by the different fields of activity in which bioengineers work.

There are two kinds of international mobility: students who have already gained their Bachelor degree can move abroad to study for their Master at another institution; it is also possible to take some course modules in another institution. The mobility rate for AGRO students on exchange schemes such as Erasmus is around 30-40%, depending on the year.

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.