



BIRA2M - Introduction

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 agricultural science and technology.

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

- Applied biotechnology
- Biometrics
- Animal and plant production
- Management and analysis of production systems and processing
- Agricultural management and decision-making support
- Process engineering

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

- Technology and food quality
- Integrated agronomy
- Integrated plant protection
- Water and land resources
- Agricultural economics and natural resources
- Information analysis and management in agricultural engineering
- Agricultural development and production in the tropical zones

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

- Planning experiments
- Carrying out surveys
- 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 agricultural problem ranging from the molecular level to an agro-ecosystem.

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.

4. To formulate and resolve a complex agricultural 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 incorporating scientific, economic and sociological aspects. This problem may be related to agricultural production and the quality of products, agricultural production systems and sectors, and to the transformation of agricultural products.

4.1 To strategically differentiate the key elements from the less critical elements relating to a complex agricultural 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 agricultural engineering problem.

4.3 To analyse a complex agricultural 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 agricultural 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 agricultural sciences.

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.

As the graduate must be able to manage a project alone and in a team, the skills listed below are described in the context of the master, through projects not only considered in their 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

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
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OPTIONS

Les étudiants ont le choix entre 7 options en première année de master et 11 modules d'approfondissement en deuxième année de master. La plupart des combinaisons sont possibles. Cependant, les étudiants sont invités à réfléchir dès la première année à l'articulation des options et des modules, certains modules suivant de manière préférentielle certaines options.

Les étudiants qui souhaitent suivre le module interdisciplinaire en entrepreneuriat (INEO) doivent s'y inscrire en même temps qu'à l'option dès la première année de master. En effet, le programme de ce module devra s'articuler avec celui de l'option sur les deux années de master.

Attention: l'inscription à ce module fait l'objet d'une sélection qui a lieu au moment de la rentrée académique. Une fois sélectionnés, les étudiants prendront contact avec le vice-doyen pour aménager leur programme de cours personnel et répartir les cours INEO et les cours d'option sur les deux années du master.

La participation au programme Erasmus Mundus interuniversitaire AFEPA (Agricultural, Food and Environmental Policy Analysis) fait également l'objet d'une sélection dont les modalités sont décrites à la page suivante: www.uclouvain.be/afepa

- > [Option 1A - Food nutrition and health](#) [en-prog-2024-bira2m-lbira201o]
- > [Option 7A- Water and Earth Resources](#) [en-prog-2024-bira2m-lbira207o]
- > [Option 8A](#) [en-prog-2024-bira2m-lbira208o]
- > [Option 9A - Plant health](#) [en-prog-2024-bira2m-lbira209o]
- > [Option 10A - Data science](#) [en-prog-2024-bira2m-lbira210o]
- > [Option 11A - Agricultural and Resource Economics](#) [en-prog-2024-bira2m-lbira211o]
- > [Option 12A : Sustainability engineering](#) [en-prog-2024-bira2m-lbira012o]
- > [Option 13A - Business Creation](#) [en-prog-2024-bira2m-lbira232o]
- > [Option 18A - Human health](#) [en-prog-2024-bira2m-lbira218o]

OPTION 1A - FOOD NUTRITION AND HEALTH [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

OPTION 8A [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:


● LBIRA2108B	Plant production	Yannick Agnan Stephan Declerck Xavier Draye Guillaume Lobet	
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OPTION 9A - PLANT HEALTH [30.0]

- Activity with requisites
 - 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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C sn 2024-2025 or the following year

OPTION 11A - AGRICULTURAL AND RESOURCE ECONOMICS [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
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OPTION 18A - HUMAN HEALTH [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:

○ LBIO1237B	Immunology : basis and applications in biology - Lectures	Jean-Paul Dehoux	(FR) [q1] [25h] [3 Credits] 🌐	X	
○ LBIR1342A	Analyse de composés organiques dans des matrices complexes 1 partim A	Sonia Collin	(FR) [q2] [30h] [3 Credits] 🌐	X	
○ LBIRC2109A	Process engineering: Unit operations	Damien Debecker	(FR) [q2] [30h+7.5h] [3 Credits] 🌐 > English-friendly	X	
○ LBRAL2102	Physiological and nutritional biochemistry	Cathy Debier (coord.) Emeline Dierge	(EN) [q1] [37.5h+0h] [4 Credits] 🌐 > French-friendly	X	

○ 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] 

○ Specifics courses (10 credits)

○ LBIR1230	Introduction to biosphere engineering	Philippe Baret Pierre Defourny (coord.) Pierre Delmelle	FR [q2] [60h] [5 Credits] 
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○ Unités d'enseignement au choix libre pour 5 crédits (5 credits)

The students have a free choice of courses within one of the bachelor programs in Sciences and Technology Sector : <https://uclouvain.be/fr/etudier/les-facultes.html>

From 5 to 5credit(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 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.

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

peuvent être consultés dans le [module complémentaire](#).

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
Masters			
			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

