GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

Agroecology (I003066)

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time 150 h**

Course offerings in academic year 2025-2026

A (semester 1)	English	Gent

Lecturers in academic year 2025-2026

D'Haene, Eline	LA21	staff member
de la Pena, Eduardo	LA21	lecturer-in-charge
De Neve, Stefaan	LA20	co-lecturer
Dessein, Joost	LA27	co-lecturer

Offered in the following programmes in 2025-2026	crdts	offering
Master of Science in Bioscience Engineering: Agricultural Sciences	5	A
Master of Science in Bioscience Engineering: Forest and Nature Management	5	A

Teaching languages

English

Keywords

Agroecology – Agricultural systems– Food systems – Sustainability

Position of the course

Agroecology is defined in a variety of ways. In the narrowest sense, agroecology refers to the application of ecological concepts and principles to the management and design of agroecosystems. Over time, however, attention to socio-economic and political aspects has also become central to agroecology. Agroecology can be seen as a science, a set of principles and practices - in other words, an agricultural approach. Importantly, agroecology is not a specific production method with a set of specifications, but a body of thought, a holistic view of the agricultural and food system. Here, agroecology's ambition is to make agricultural production and food systems more sustainable with a holistic systems approach at its core, based on agroecological agricultural practices, short and local marketing chains and limiting external inputs

Contents

This course teaches students the core principles of agroecology, including the 10 elements defined by the FAO and the 13 principles established by the HLPE (High Level Panel of Experts on Food Security and Nutrition) i.e., the science-policy interface of the Committee on World Food Security (CFS), which is hosted by the Food and Agriculture Organization (FAO) of the United Nations. Teaching is conducted through a case-based approach, where students analyze and discuss real-life examples. Each case is explored starting from the agroecological principles, examining how and to what extent these principles are applied in different contexts. Through this process, students deepen their theoretical understanding. In addition to the cases presented during lectures, students will also work independently on a case study, allowing them to apply the theoretical insights gained, both from this course and previous coursework, to a practical situation.

During the various lectures, the following aspects will be explored in depth:

- Introduction to agroecology: definition of the concept, its evolution, the different perspectives, and underlying principles
- Ecological principles within agroecology: importance of (bio)diversity, landscape

management, resilience
- Soil health and management: importance of biological soil quality, nutrient balances, organic matter, nutrient efficiencies
- Diverse farming systems that fit within an agroecological approach and agroecosystem design: how the principles can be translated into the design of agroecosystems
- Pest and disease management within the agroecological vision
- Agroecological plant breeding
- The role of animals within agroecology
- Agroecology and climate change
- Economics through an agroecological lens: cost-benefit analyses, economic viability
- Agroecological policy: what policies and instruments exist or are needed for an agroecological transition
- In-depth reflection on the socio-cultural and political dimensions of agroecology: decentralized governance, participation, co-creation, inter- and transdisciplinary collaboration

Initial competences

This course builds further on the domains of agriculture and agricultural economics, ecology, and rural development. Although no prior knowledge is required, students who lack sufficient background are expected to independently acquire the necessary knowledge. Certain terms/concepts will not be covered in detail during this course, but the necessary information will be provided to enable students to understand these terms/concepts on their own.

Final competences

1 Recognise, distinguish, name and explain the different views that exist within agroecology

2 Report on the complexity within agroecology

3 Apply the different agroecological principles to real cases (such as redrawing? of agroecosystems)

4 Being able to combine different disciplines and insights (technical, economic, social, political) when working out optimisations/alternatives that contribute to a sustainableagro-ecosystem

5 Providing advice on the development and implementation of agroecological production systems integrating the various agroecological principles (translation into real cases based on the knowledge provided)

6 Critically analysing agricultural and food systems and paying attention to sustainability factors (ecological, social and economic) and the importance of broader contextual factors (social trends, policy, etc.)

7 Be able to engage in dialogue with specialists and non-specialists on agroecology

8 Being able to think and communicate critically about agroecology with attention to evidence-based decision-making

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Lecture, Independent work

Extra information on the teaching methods

The content of this course is illustrated with up-to-date slides during lectures.
Course materials and background documentation will be made available on Ufora.
Therefore, there are no direct costs associated with this course.

Study material

Type: Slides

Name: Course material
Indicative price: Free or paid by faculty
Optional: no
Available on Ufora : Yes

References

Gespecialiseerde tijdschriften en (hand)boeken. De exactereferenties zullen terug te vindenzijn in het lesmateriaal dat ter beschikking wordt gesteld op Ufora.

Course content-related study coaching

Permanent opportunity for questioning, follow-up as well as feedforward and feedback before,during lectures or by appointment (online or physical).

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Presentation, Assignment

Examination methods in case of periodic assessment during the second examination period

Assignment

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

The assessment criteria for non period-based assessment are put on Ufora.
There is a second examination opportunity in case of non period-based assessment but in modified form: an assignment (independent) instead of a presentation (group work)

Calculation of the examination mark

The final grade will be calculated as follows: 75% assignment (group work) and 25% presentation.