Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course Specifications
Valid as from the academic year 2019-2020

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

<table>
<thead>
<tr>
<th>Credits</th>
<th>Study time</th>
<th>Contact hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>120 h</td>
<td>40.0 h</td>
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</tbody>
</table>

Course offerings and teaching methods in academic year 2019-2020

A (semester 2) Dutch UGent on campus group work

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>on campus seminar:</td>
<td>2.5 h</td>
<td></td>
</tr>
<tr>
<td>coached exercises</td>
<td></td>
<td></td>
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<tr>
<td>practicum</td>
<td>1.25 h</td>
<td></td>
</tr>
<tr>
<td>on campus lecture:</td>
<td>5.0 h</td>
<td></td>
</tr>
<tr>
<td>plenary exercises</td>
<td></td>
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<tr>
<td>excursion</td>
<td>1.25 h</td>
<td></td>
</tr>
<tr>
<td>on campus lecture</td>
<td>27.5 h</td>
<td></td>
</tr>
<tr>
<td>guided self-study</td>
<td>1.25 h</td>
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</table>

Lecturers in academic year 2019-2020

Steppe, Kathy LA21 lecturer-in-charge

Offered in the following programmes in 2019-2020

| Bachelor of Science in Bioscience Engineering (main subject Agricultural Sciences) | 4 | A |
| Bachelor of Science in Bioscience Engineering (main subject Cell and Gene Biotechnology) | 4 | A |
| Bachelor of Science in Bioscience Engineering (main subject Chemistry and Food Technology) | 4 | A |
| Bachelor of Science in Bioscience Engineering (main subject Environmental Technology) | 4 | A |
| Bachelor of Science in Bioscience Engineering (main subject Forest and Nature Management) | 4 | A |
| Bachelor of Science in Bioscience Engineering (main subject Land and Water Management) | 4 | A |
| Joint Section Bachelor of Science in Bio-Engineering | 4 | A |

Teaching languages

Dutch

Keywords

Ecosystems, energy flow, cycles, populations, communities, climate

Position of the course

Provide to Bachelor students basic insight with respect to ecosystem functioning, including structure, functioning (basic laws, populations, communities) and the interrelationships with the abiotic environment (e.g., climate). This serves as a basis for further analysis of actual ecological problems and for critical evaluation of possibilities for repair.

Contents

Theory

1. Introduction
Historical development of ecological science; Ecological sub-disciplines, concepts and terminology; Organization in ecosystems: structural levels, time steps and response times; Mathematical models for ecological research

2. Climate and characteristics of ecosystems
Climate formation; Climate distribution on Earth; Characteristics of the major biomes

(Approved)
3. From population to community ecology
Description of populations and metapopulations; Population growth and regulation; Intraspecific competition; Structure and dynamics of communities, including concepts of niche, abiotic gradients and biodiversity; Succession

4. Biotic interactions
Interspecific interactions, including hunter-prey models; Symbiosis, mutualism, and parasitism

5. Functional systems ecology
Basic laws and thermodynamic background; Functional groups and trophic networks; Types of food chains; Food web; Functional representation of ecosystems with flow charts; Radiation regime in ecosystems; Energy exchange in an ecosystem

6. Impact of climate change on ecosystems

Exercises
1. Visit to the forest ecosystem Aelmoeseneie (measuring tower of the experimental forest at Gontrode) Introduction to ecosystem research; Demonstration of instruments and sensors used to determine abiotic characteristics of the experimental forest
2. Calculations
3. Use of quantitative methods in ecological research

Initial competences
No specific prior knowledge is required

Final competences
1. Insight in the development of ecological science.
2. Knowledge about basic ecological laws, the structure and functioning of ecosystems.
3. Understanding and explaining the interrelationships between ecosystems and their climate, including the major plant formations and their characteristics.
4. Knowledge about structure and dynamics of living organisms in ecosystems, as well as their interactions.
5. Insight about the impact of climate change on ecosystems.

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
Guided self-study, excursion, on campus group work, on campus lecture, practicum, on campus lecture: plenary exercises, on campus seminar: coached exercises

Extra information on the teaching methods
Lectures are supported by slides;
During the coached exercises calculations are performed under the supervision of the assistant;
During the excursion, we visit the UGent-forest Aelmoeseneie and have a practical exercise.

Learning materials and price
Lecture notes are available. Estimated total cost: 20 euro

References

Course content-related study coaching
Questions can be asked before or after each lecture, or when making an appointment. Minerva will be used to communicate about practical issues.

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period
Written examination with open questions

Examination methods in case of permanent evaluation

(Approved)
Report
Possibilities of retake in case of permanent evaluation
examination during the second examination period is not possible

Extra information on the examination methods
The non-periodic evaluation consists of a written report of the excursion. The non-periodic evaluation cannot be retaken during the second exam period.

Calculation of the examination mark
Theory exam: periodic evaluation (60%)
Exercises: periodic evaluation (20%)
Reports: non-periodic evaluation (20%)
Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.