GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2019-2020

Biodiversity Patterns in Space and Time (C003313)

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

Credits	Study time	Contact hrs
4.0	120 h	47.5 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	practicum	12.5 h
			microteaching	15.0 h
			lecture	20.0 h

Lecturers in academic year 2020-2021

Sabbe, Koen	WE11	lecturer-in-charge
De Troch, Marleen	WE11	co-lecturer

Offered in the following programmes in 2020-2021	crdts	offering
Master of Science in Teaching in Science and Technology (main subject Biology)	4	A
Master of Science in Biology	4	A
Exchange Programme in Biology (master's level)	4	A

Teaching languages

English

Keywords

Biodiversity, species-area relations, species-energy relations, community assembly

Position of the course

Biodiversity on Earth is unevenly distributed in space and time, with highly diverse systems such as tropical rain forests and coral reefs contrasting with hot and cold deserts. This course aims at familiarizing the student with important patterns in biodiversity in natural environments at various spatial and temporal scales, and exploring recent concepts and hypotheses that have been put forward to describe and explain the underlying processes creating these gradients.

Contents

General introduction: overview traditional and alternative measures of biodiversity (e.g. species richess, phylogenetic and taxonomic diversity, species turnover)
Species-area relationships: spatial scaling of biodiversity measures. How do diversity measures, but also species' distribution patterns and turnover scale with area?
Species-energy relationships. The well-known latitudinal gradient in diversity has been related to increased temperature and humidity in the (sub)tropics, which drive productivity (and hence resource availability) but also species' metabolic rates (and hence rates of extinction, evolution and ecological interactions).
Species-time relationships. How do observed spatial patterns in biodiversity change with the temporal window of observation?
The importance of neutral vs niche-based processes in determining community structure and assembly
Body size-diversity relations: are microbial (< 1 mm) biodiversity patterns fundamentally different from those in higher, multicellular organisms?

Initial competences

Bachelor-level knowledge of biodiversity, ecology and evolution of major pro- and eukaryotic organismal groups

Final competences

1 The student is able to critically interpret biodiversity variation and patterns in space and time in the light of recent concepts and hypotheses regarding the underlying

causes of biodiversity variation.
2 The student can characterize the biodiversity of communities using various biodiversity indices.
3 The student is able to analyse biodiversity data in an R environment and can interpret the results of these exercises.
4 The student can place, critically evaulate, integrate and synthesize questions related to biodiversity variation in space and time, and can adequately report and communicate the results of these analyses.

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

Lecture, microteaching, practicum

Extra information on the teaching methods

In addition to the lectures, students learn to analyze patterns in biodiversity in space and time during practicals (e.g. exercises data analysis) and microteaching (student lectures, individually or in small groups).

Learning materials and price

Course notes and publications are availble via Ufora.

References

Species Diversity in Space and Time (Rosenzweig, Cambridge University Press, 1995)
Scaling Biodiversity (Storch, Marquet & Brown, editors, Ecological Reviews, Cambridge University Press, 2007)

Course content-related study coaching

Direct interactions during lectures (incl. student lectures), practicals and excursion. Possibility for personal contact after electronic appointment or via Ufora.

Evaluation methods

end-of-term evaluation and continuous assessment

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

Oral examination

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

Oral examination

Examination methods in case of permanent evaluation

Participation, report

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

Periodic evaluation: after written preparation, the answers are discussed with the examinator(s). Additional questions may be asked. Permanent evaluation: scores for student lectures (microteaching), reports practicals and participation. For calculation final exam score: see below.

Calculation of the examination mark

1st and 2nd examination period: periodic evaluation (60 %), non-periodic evaluation (40 %). It is not possible to succeed for this course if the student fails for the periodic evaluation.