

- Faculté des sciences
- www.unine.ch/sciences

Biodiversity and ecosystem functioning (3BL2310)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en biologie	Cours: 28 pg	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Clara Zemp

Contenu

The course aims at providing in-depth analysis of a common statement: biodiversity loss impairs ecosystem functioning, stability and services to people. In the past decades, there have been many scientific studies trying to prove this statement based on empirical and experimental approaches quantifying the linkages between biodiversity and ecosystem functioning. We will explore scientific grounds, the state of the knowledge, and its limitations. We will discuss what are the implications of this knowledge for conservation and restoration of ecosystems in practice.

The first part of the course provides scientific backgrounds, more specifically:

1. Concepts of biodiversity, ecosystem functioning, ecosystem services and nature's contributions to people, and how they are related in the framework the IPBES
2. Theory and development in biodiversity-ecosystem functioning relationship (BEF) research
3. The biological mechanisms of the BEF relationship, including complementary and selection effects
4. The empirical approaches and statistical methods to assess the BEF relationship
5. Biotic interactions and multi-trophic diversity affecting BEF relationships
6. Multifunctionality
7. Scaling-up BEF research
8. Impact of global change drivers on BEF relationship

The second part includes three excursions:

- Guided tour to a scientific BEF experiment (PaNDiv experiment near Bern)
- Virtual tour to a scientific BEF experiment (EFForTS-BEE in Indonesia)
- Guided tour to an actual forest management site in the canton Neuchâtel.

The last part of the class is a debate at the science-policy interface, in which students argue on the linkages between biodiversity and ecosystem functioning, stability and services, and the implications for conservation and restoration of ecosystems in an era of global changes.

Forme de l'évaluation

Graded continuous assessment including :

- Participation in the in-class activities related to the lectures (group)
- Online quiz associated with the lectures (individual)
- Participation in the excursions and report (individual)
- Preparation of the debate and performance during the debate (group)

(specific modalities will be defined on Moodle).

Modalités de rattrapage

If the final mark is insufficient and results in a failure, the student will have to prepare one scientific review report (1000-2000 words without references, and including 5 references) related to a topic suggested by the professor. The report should be handed in two weeks before the official start of the exam session for which a second attempt is made. In addition, the student will pass an oral exam of 30 minutes scheduled during the exam session. A failure to hand in the report or an unjustified absence from the oral exam constitutes a second and definite failure from the course.

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Documentation

Available on Moodle

Pré-requis

Basic knowledge in biology and ecology is required

Forme de l'enseignement

This course includes

- Lectures
- In-class group activities related to the lectures
- On-site and virtual excursions
- Group debate

Objectifs d'apprentissage

At the end of the formation the student must be able to :

- Discuss the importance of biodiversity for ecosystem functions and services based on scientific arguments
- Describe the background and state-of-the-art knowledge related to biodiversity and ecosystem functioning relationship
- Transfer knowledge to ecosystem management in practice

Compétences transférables

- Work in team
- Discuss based on scientific evidence
- Integrate the scientific mindset including critical thinking, relying on empirical evidence, evaluating the validity of a statement