ENV-220

Fundamentals in ecology

Bachofen Christoph, Battin Tom Ian, Grossiord Charlotte

Cursus	Sem.	Type
Environmental Sciences and Engineering	BA4	Obl.
HES - SIE	E	Obl.

Language of teaching	English
Credits	5
Session	Summer
Semester	Spring
Exam	Written
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	3 weekly
Exercises	1 weekly
Project	1 weekly
Number of positions	

Summary

The students will learn the fundamentals in ecology with the goal to perceive the environment beyond its physical and chemical characteristics. Starting from basic concepts, they will acquire mechanistic understanding of biodiversity, ecosystem functioning and global change.

Content

The content of the course will be structured along the following lines:
1. The nature of ecology
2. The physical and chemical environment
3. The organism and its environment
4. Population and community ecology
5. Metapopulation and metacommunity ecology
6. Biodiversity
7. Ecosystem ecology (decomposition, nutrient cycling, biogeochemistry)
8. Terrestrial, freshwater and marine ecosystems
9. Global change

Keywords

ecology, ecosystems, theory and concepts, environment, populations, communities, biodiversity, global change

Learning Outcomes

By the end of the course, the student must be able to:

- Analyze environmental problems in a systematic way rooted in ecological theory
- Integrate knowledge from the abiotic and biotic components that form the fundamentals of ecology
- Differentiate between pure science and engineering
- Defend why ecological thinking is requried to face the great challenges coming with global change
- Conduct simple experiments related to ecology

Transversal skills

- Demonstrate a capacity for creativity.
- Give feedback (critique) in an appropriate fashion.
- Keep appropriate documentation for group meetings.

Teaching methods

The students will follow lectures and do practical work, including experimental fieldwork, analyses in the laboratory, and an initiation into R with practical examples from ecology.

Assessment methods

Written exam: 60%
Written report on the practical part during the semester: 40%

Supervision

Office hours	No
Assistants	Yes

Resources

Bibliography

Elements of Ecology, 9th Edition
Thomas M. Smith, University of Virginia
Robert Leo Smith, (Emeritus) West Virginia University
©2015 | Pearson

https://www.pearson.com/us/higher-education/product/Smith-Elements-of-Ecology-9th-Edition/9780321934185.html

Ressources en bibliothèque

- Elements of Ecology, Smith & Smith, Pearson 2012, 9th ed (online)
- Elements of Ecology, Smith & Smith, Pearson 2015, 9th ed (paper)

Moodle Link

- https://go.epfl.ch/ENV-220