ENV-200

Environmental chemistry

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Cursus	Sem.	Type
Environmental Sciences and Engineering	BA3	Obl.
HES - SIE	H	Obl.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	3 weekly
Exercises	2 weekly
Number of positions	

Summary

This course provides students with an overview over the basics of environmental chemistry. This includes the chemistry of natural systems, as well as the fate of anthropogenic chemicals in natural systems. It enables students to apply general chemical concepts to natural systems.

Content

- Introduction to environmental chemistry
- Chemical composition of natural water
- Biogeochemical cycles of organic and inorganic pollutants
- Partitioning of organic and inorganic pollutants
- Engineering applications of environmental chemistry

Keywords

carbonate system, alkalinity, partitioning, redox, speciation

Learning Prerequisites

Required courses

General chemistry

Learning Outcomes

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

- Estimate pH of natural waters
- Compute alkalinity in natural and engineered systems
- Analyze partitioning behavior of organic pollutants
- Analyze metal speciation
- Formulate redox reactions for inorganic species

Teaching methods

Lecture ex cathedra, exercises

Expected student activities

participation in homework sessions

Assessment methods

15 % midterm exam I during the semester, 15 % midterm exam II during the semester, 70 % exam during exam session

Resources

Bibliography

- Benjamin: Water Chemistry, McGraw Hill, 2002
- Sigg, Behra, Stumm : Chimie des milieux aquatiques, Dunod, 2006
- Bliefert, Perraud: Chimie de l'environnement, Boeck ed., 2004;
- Brezonik, Arnold: Water Chemistry, 2011

Ressources en bibliothèque

- Water Chemistry / Benjamin
- Chimie de l'environnement / Bliefert
- Chimie des milieux aquatiques / Sigg
- Water Chemistry / Brezonik

Notes/Handbook

provided weekly via moodle

Moodle Link

- https://go.epfl.ch/ENV-200

Prerequisite for

Pollutants analysis in the environment, Microbiology for Engineers, Fate and behaviour of organic pollutants