

ENV-200

**Environmental chemistry**

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Cursus	Sem.	Type	
Environmental Sciences and Engineering	BA3	Obl.	Language of teaching English
HES - SIE	H	Obl.	Credits 5
			Session Winter
			Semester Fall
			Exam Written
			Workload 150h
			Weeks 14
			<b>Hours</b> <b>5 weekly</b>
			Lecture 3 weekly
			Exercises 2 weekly
			<b>Number of positions</b>

**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**

10 % midterm exam I during the semester, 10 % midterm exam II during the semester, 80 % 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](#)
- [Environmental Organic Chemistry / Schwarzenbach](#)

#### **Notes/Handbook**

provided weekly via moodle

#### **Moodle Link**

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

#### **Prerequisite for**

Pollutants analysis in the environment, Ecotoxicology, Fate and behaviour of organic pollutants