

Environmental Chemistry and Analysis: Water, Soil and Sediment (I002588)

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

Credits 5.0 **Study time 150 h**

Course offerings and teaching methods in academic year 2024-2025

A (semester 1)	English	Gent	practical lecture seminar
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Lecturers in academic year 2024-2025

Tack, Filip	LA24	lecturer-in-charge
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Offered in the following programmes in 2024-2025

	crdts	offering
Master of Science in Environmental Science and Technology	5	A
Exchange Programme in Bioscience Engineering: Chemistry and Bioprocess Technology (master's level)	5	A
Exchange Programme in Bioscience Engineering: Environmental Technology (master's level)	5	A
Exchange Programme in Bioscience Engineering: Land and Forest management (master's level)	5	A

Teaching languages

English

Keywords

Pollutants, contamination, soil, water, sediment, biogeochemistry

Position of the course

Relying on knowledge acquired in general and organic chemistry elements from soil chemistry and aquatic chemistry are combined in a quantitative treatment of chemical processes, equilibria and reaction dynamics in the environment. Focus in this course is on water, soil and sediment, and on physico-chemistry and inorganic chemistry. The source, nature and properties of contaminants are reviewed and applied in the study of their behaviour in water, sediment, soil and ground water and of their disrupting effects. Along the trajectory, methods and tools for chemical analysis are introduced and explored.

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Initial competences

Knowledge of general inorganic chemistry and basics of organic chemistry

Final competences

- 1 Understand and explain chemical processes in the terrestrial and aquatic environment
- 2 Identify and explain the disruptance of natural chemical processes in the environment.
- 3 Understand the principles of chemical analytical methods for environmental analysis, their applicability and limitations
- 4 Understand chemical water quality and know how to determine water quality using chemical analytical methods

- 5 Conduct chemical environmental analyses in the lab
- 6 Proces, interprete and report analytical results

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

Seminar, Lecture, Practical

Extra information on the teaching methods

Practicum: lab exercises: Analysis of water, soil and sediment

PC-class exercises: Exercises chemical equilibrium calculations on PC via instruction clips and group interaction through the forum with feedback during the lecture hours

Lecture: plenary exercises: during the theory class, example exercises are interactively solved.

Study material

Type: Syllabus

Name: Environmental Chemistry and Analysis: Water, Soil and Sediment

Indicative price: € 25

Optional: no

Type: Slides

Name: Slides

Indicative price: Free or paid by faculty

Optional: no

Type: Lab Material

Name: Alcohol Felt Tip Pen

Indicative price: € 10

Optional: no

References

Course content-related study coaching

Assessment moments

end-of-term and continuous assessment

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

Written assessment with open-ended questions, Written assessment

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

Written assessment with open-ended questions, Written assessment

Examination methods in case of permanent assessment

Professional practice, Assignment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Laboratory exercised: score based on lab reports and activities

PC-exercises: test in the PC class

End-of-term assessment: written exam with open questions (60%) and numerical problems (40%)

Calculation of the examination mark

Continuous assessment: 8/20

• *Laboratory exercises: 6/20*

• *PC-exercises: 2/20*

End-of-term assessment: 12/20

Students who do not pass both the continuous assessment and the end-of-term assessment, or who eschew one or more evaluation moments without legal

justification, may be failed by the examiner. In these cases, a score of at most 9/20 will be assigned.