

Water Quality (I002872)

Course size	<i>(nominal values; actual values may depend on programme)</i>		
Credits 6.0	Study time 168 h	Contact hrs	64.0h

Course offerings in academic year 2022-2023

A (semester 2)	English	Gent
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Lecturers in academic year 2022-2023

de Klein, Jeroen JM	WAGENI01	lecturer-in-charge
Koelmans, Bart	WAGENI01	co-lecturer
Kooi, Merel	WAGENI01	co-lecturer
Pascucci, Stefano	WAGENI01	co-lecturer

Offered in the following programmes in 2022-2023

	crdts	offering
International Master of Science in Health Management in Aquaculture	6	A

Teaching languages

English

Keywords

Aquatic chemistry, transport and exchange processes, fate and bio-magnification of micro-pollutants, nutrient behaviour and algal nuisance, basic water quality modelling

Position of the course

Contents

This advanced course provides a critical overview of the processes and quantitative process descriptions that are essential to understanding surface water quality and systems analysis of aquatic systems. Chemical and physical processes are emphasized and treated in the context of policy and risk assessment developments. Six themes will be treated:

- advanced aquatic chemistry;
- transport and exchange processes;
- fate and bio-magnification of micro-pollutants;
- nutrient behaviour and algal nuisance; - basic water quality modelling; - oceans.

Each theme takes one week of the course. For each theme a recent scientific paper is critically analysed, in order to identify key innovations in the field. These papers are updated annually.

Initial competences

Basic chemistry, differential equations, introductory knowledge of surface water quality and aquatic ecology

Competence for admission to EM AquaH study program

Final competences

After successful completion of this course students are expected to be able to:

- quantify and critically evaluate the importance of physical, chemical and biological processes in freshwater and marine aquatic (eco)systems, such as chemical reactions in lakes and rivers, solute transport, sedimentation and re-suspension, gas-water exchange, sediment-water exchange, adsorption and bioaccumulation, oligotrophication and eutrophication, nutrient behaviour and retention, C-, N-, and P- behaviour in aquatic systems, light climate and algal growth, carbonate and aragonite formation, marine geochemistry and ocean acidification.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Practicum, Group work, Guided self-study, Lecture, Pde tutorial, Self-reliant study activities

Extra information on the teaching methods

- PC practical basic water quality modelling;
- preparing and attending lectures;
- independent study;
- practising problem solving;
- reading and discussing selected scientific papers.

Learning materials and price

Study material. Course reader with exercises. Powerpoint presentations (delivered through Brightspace/ MyPortal, prior to the lectures). Answers to exercises. Selected scientific papers.

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 examination, Open book examination, Assignment

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

Written examination, Open book examination, Assignment

Examination methods in case of permanent assessment

Open book examination, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods**Examination:**

- weekly assignments (20%);
 - written exam (80%). This exam is partly open book.
- Successful partial interim examinations remain valid for a period of three years.

Calculation of the examination mark

The normal grades are between 0-10 and 6 ECTS achieved if passed (>5.5)