

# Course Specifications

From the academic year 2015-2016 up to and including the

## Wastewater Treatment Technology (I001935)

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

Credits 6.0      Study time 180 h      Contact hrs 90.0 h

Course offerings and teaching methods in academic year 2016-2017

A (semester 1)	English	practicum	30.0 h
		seminar: coached	30.0 h
		lecture	25.0 h
		self-reliant study	5.0 h

Lecturers in academic year 2016-2017

Rabaey, Korneel	LA06	lecturer-in-charge
De Gueldre, Greet	UA	co-lecturer
Verliefde, Arne	LA08	co-lecturer
Vlaeminck, Siegfried	LA06	co-lecturer

Offered in the following programmes in 2016-2017

	crdts	offering
<a href="#">Master of Science in Technology for Integrated Water Management</a>	6	A

Teaching languages

English

Keywords

Environmental technology, environmental sanitation, wastewater engineering, microbiology, policy

Position of the course

Contents

Part A: Physico-chemical methods for water and wastewater treatment

- 1 Pretreatment
- 2 Coagulation and flocculation
- 3 Membrane techniques and reuse
- 4 Remaining concerns regarding the ecotoxicological risk of effluents and sludge

Part B: Biotechnological methods for water treatment

- 1 Drinking water treatment
- 2 Activated sludge
- 3 Nutrient removal
- 4 Microbial ecology in activated sludge
- 5 Biofilm based treatment processes

Initial competences

\*General

A general scientific background (biology, chemistry, physics and mathematics) at academic level is required.

\*Sequentiality

Module 1: Global water problems and integrated water management

Module 2: Integrated assessment of water and sediment quality

Final competences

- 1 After Part A: To have insight in the physicochemical methods which are used in treating several water systems. This course part focusses on physicochemical water treatment and sludge treatment. The practical part includes laboratory exercises and

industrial site visits.

- 2 After part B: Knowledge of important environmental engineering processes that rely on microbiology, in particular drinking water production and wastewater treatment. Details are provided on how activated sludge works, how nutrient removal is achieved and what the key parameters are driving the process. further we study biofilm based wastewater treatment and state-of-the-art technology such as membrane bioreactors

#### 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

Lecture, practicum, self-reliant study activities, seminar: coached exercises

#### Extra information on the teaching methods

Theory: oral lectures

Exercises: are given during the lectures and as take-home exercises, as well as laboratory exercises and plant visits

#### Learning materials and price

1. Syllabus

2. Selected capita from: "Wastewater Engineering: Treatment And Reuse" (2002), by Metcalf & Eddy Inc., George Tchobanoglous, Franklin L Burton and H. David Stensel, McGraw-Hill Education - Europe (London - United States), 1408 p., ISBN 9780071241403

#### References

see references in the notes

#### Course content-related study coaching

#### Evaluation methods

end-of-term evaluation

#### Examination methods in case of periodic evaluation during the first examination period

Written examination, open book examination

#### Examination methods in case of periodic evaluation during the second examination period

Written examination, open book examination

#### Examination methods in case of permanent evaluation

#### Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

#### Extra information on the examination methods

Theory: period aligned evaluation

Theory: written examination (partially open and partially closed book) and oral examination

Practical part: continuous evaluation

#### Calculation of the examination mark