

## Principles of Quantitative Water Management (I002751)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

<b>Course size</b>	<i>(nominal values; actual values may depend on programme)</i>		
<b>Credits</b> 3.0	<b>Study time</b> 90 h	<b>Contact hrs</b>	30.0 h

### Course offerings and teaching methods in academic year 2020-2021

A (semester 2)	Dutch	Gent	lecture	15.0 h
			seminar: practical PC room classes	10.0 h
			excursion	5.0 h

### Lecturers in academic year 2020-2021

Verhoest, Niko	LA20	lecturer-in-charge
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### Offered in the following programmes in 2020-2021

	crdts	offering
<a href="#">Bachelor of Science in Bioscience Engineering (main subject Forest and Nature Management)</a>	3	A
<a href="#">Master of Science in Bioscience Engineering: Environmental Technology</a>	3	A

### Teaching languages

Dutch

### Keywords

Water management, hydrological processes, introduction to modelling, introduction to ecohydrology

### Position of the course

The course provides insight in water management that is steered by the water policy. The main hydrological processes are discussed. This allows that the student understands how hydrological models are constructed. The physical basis for open channel flow is presented such that the student understands the different types of flow regimes in rivers. Understanding the physical background of the transport of water in and on the surface allows to understand the impact of certain interventions on the complete water system, and allows to make use of such interventions in an ecohydrological context in which (hydrological) site conditions can be changed as management measure. Techniques are discussed to cause a wetting or drying of the system.

### Contents

#### Theory:

1. Water policy versus water management (principles of the European Water Framework Directive, the European Floods Directive, the Flemish Decree of Integral Water Management, Water management in Flanders: who does what?)
2. Tools for water management (monitoring of rainfall, throughfall, stem flow, evapotranspiration, soil moisture, groundwater levels, river discharges; Online databases of hydrological data; Introduction to hydrological modelling, Introduction to open channel flow, Impact of measures in the river system on the flow regime)
3. Introduction to ecohydrology (abiotic site conditions, wetting/drying of areas: causes, restoration measures)

#### Exercises:

The exercises consist of computer-based exercises that demonstrate the theory and an excursion to a nature restoration project.

### **Initial competences**

This course builds on learning outcomes of the course units 'Earth Sciences', 'Environmental Sciences' and 'Fluid mechanics'; or the learning outcomes have been achieved differently.

### **Final competences**

- 1 To have a basic knowledge of the water management in Flanders.
- 2 To know the different hydrological processes.
- 3 To have an overview of the different types of hydrological models.
- 4 To understand the impact of measures in the river system on the flow regime.
- 5 To understand how water management measures can be applied in an ecohydrological context.

### **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**

Excursion, lecture, seminar: practical PC room classes

### **Learning materials and price**

Course notes are available (approx. 10 euro). The powerpoint presentations will be made available to the students through UFora, prior to the lectures.

### **References**

Chow, V.T., D.R. Maidment, L.W. Mays, Applied hydrology, Mc Graw-Hill International editions, 1988.

### **Course content-related study coaching**

Individual coaching is possible

### **Evaluation methods**

end-of-term evaluation and continuous assessment

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

Written examination with open questions, oral examination

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

Written examination with open questions, oral examination

### **Examination methods in case of permanent evaluation**

Oral examination, report

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

examination during the second examination period is not possible

### **Calculation of the examination mark**

Theory: 70%, Exercises: 30%

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.