

Faculty of Biological, Agronomic and Environmental Engineering

BIRE2103 General hydrology

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s): Charles Bielders, Marnik Vanclooster
Language: French
Level: Second cycle

Aims

At the end of the theoretical course (2.5 ECTS) and the practical exercises (2.5 ECTS), the students must be able :

- to understand the issue of water management at the scale of the local scale (the field parcel) and the scale of the catchment ;
- to describe the different processes and the different terms of the hydrological cycle at the scale of a pedon, the field parcel and the catchment, and to understand the equations used for describing these processes ;
- to describe the functioning, the advantages and disadvantages of hydrological measurement devices ;
- to interpret basic hydrological measurements (rainfall, evapotranspiration, drainage and run-off);
- to calculate, by means of simple hydrological models, the rainfall runoff relationship at the field and catchment scale;
- to justify the choice of a hydraulic device to control the surface water flow at the field and catchment scale; and
- to write a synthetic report on the practical work and to analyse critically the obtained results.

Main themes

- Issues of water management at the local and catchment scale
- Hydrological cycle (rainfall, infiltration, run-off, drainage, hypodermic flow, evapotranspiration) : processes, mathematical description, measurement methods and interpretation.
- Hydrological modelling at the field and catchment scale
- Hydraulic control of surface water flow

Content and teaching methods

Theoretical courses

- Introduction. Issues of hydrology at different scales
- Rain- Infiltration
- Evapotranspiration
- Run-off
- Hydrological modelling
- Hydrological control

Practical work

The theoretical aspects are illustrated by means of practical work in the laboratory and computer class room around 2 hydrological projects : the design of a storm bassin in a catchment and the calculation of the hydrological balance of a field parcel. An excursion allows to illustrate concepts of hydrometry and hydrological control.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Supplemental courses Soil physics, integrated water resources management, open channel hydraulics

Evaluation Report on the practical works and the excursion. Oral examination

Support - Transparencies of the theoretical course (www.icampus.ucl.ac.be)

- Syllabus (www.icampus.ucl.ac.be)

Programmes in which this activity is taught**BIR2** Bio-ingénieur**Other credits in programs**

BIR22/0E	Deuxième année du programme conduisant au grade de bio-ingénieur: Sciences et technologies de l'environnement (Technologies et gestion de l'information)	(5 credits)	Mandatory
BIR22/4E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Technologies environnementales: eau, sol, air)	(5 credits)	Mandatory
BIR22/5E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Aménagement du territoire)	(5 credits)	Mandatory
BIR22/6E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Nature, eau & forêts)	(5 credits)	Mandatory
BIR22/7A	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences agronomiques (Ressources en eau et en sol)	(5 credits)	
BIR22/7E	Deuxième année du programme conduisant au grade de bio-ingénieur : Sciences et technologie de l'environnement (Ressources en eau et en sol)	(5 credits)	Mandatory
GEOG22	Deuxième licence en sciences géographiques	(5 credits)	