UCLouvain

lbres2104c

2024

IRRIGATION AND DRAINAGE

3.00 credits	22.5 h + 12.5 h	Q2

Teacher(s)	Javaux Mathieu ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	This course provides a basic understanding of plant water requirements, soil and environmental constraints, and presents the different irrigation and drainage techniques.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 a. Contribution de l'activité au référentiel AA (AA du programme) M1.2 ; M2.2 ; M2.3 ; M2.4 ; M4.5 ; M6.5 ; M6.8 <u>Irrigation:</u> Upon completion of the course and practicals, the student will be able to : - Master the basic knowledge about the water requirements of plants - have the basic knowledge about water intake structures, conveyance, and regulation devices for irrigation water - estimate net irrigation water requirements and propose an irrigation schedule - Describe the principles underlying the different irrigation techniques - Design an irrigation management scheme and to evaluate its functioning <u>Drainage</u> : At the end of the course and lab, the student will be able to: - Master the theoretical concepts underlying the flow of water into drains and design techniques of drainage; - Assess the value of drainage on the basis of technical, economic and environmental considerations; - Dimension a parallel drainage network using the relevant equations.;
Evaluation methods	The students will be evaluated on the basis of 'continuous' evaluation. The final grade is composed of the weighted average of 6 grades: - Individual progress presentation of the group project (individual) - written report on Aquacrop (by group) - written report on Drainage exercise (by group) - written report on Sprinkler irrigation practical (by group) - Multiple choice on the MOOC (indivudual)
Teaching methods	- theory is based on e-learning. A MOOC 'technique d'irrigations' is available, which provides most of the theory through 6 modules. Questions on each module are discussed with the teacher in the course. Theory on driange is taught in class. - project to be carried out by groups on the implementation of an irrigation system in an arid country: data collection, estimation of water requirements, sizing. - practicals on AQUACROP and drainage techniques - roleplay on irrigation water management
Content	Six online modules allow students to learn the theoretical backgroung on: - M1: why to irrigate and what are consequences of irrigation? - M2: soil-water-plant relations - M3: surface irrigation - M4: soil-water-plant relations - M5: micro-irrigation - M6: how to choose and evaluate irrigation systems? Theory on drainage will be taught in class : principles, types of drainage systems, design of drainage systems. Practicals will allow students to (1) use AQUACROP to estimate plant water needs, (2) design a drainage network, and (3) characterize uniformity under sprinkler irrigation.
Inline resources	Moodle

Bibliography	Ouvrage de référence : « Traité d'irrigations », Tiercelin.et al. Syllabus pour la partie drainage
Other infos	This course can be given in English.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Advanced Master in Water-Energy-Food Nexus	NEEA2MC	3		