UCLouvain

lbres2206

2024

Advanced Hydrology for Engineers

3.00 credits	22.5 h + 15.0 h	Q1

Teacher(s)	Javaux Mathieu ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	General Hydrology (LBIR1348)
Main themes	- Open-channel hydraulics - stochastic modeling fro hydrology - Model optimization and parameterization
Learning outcomes	**At the end of this learning unit, the student is able to :** a. Contribution to 'Learning Outcomes' program M2.2 ; M2.3 ; M6.5 ; M6.8 b . Specific formulation for this activity LO program (maximum 10) At the end of the course and of the practicals, the students will be able: - to characterize the type of flow in channels/rivers. 1 - to understand and be able to apply the theory on gradually varying flow and rapid varying flow; - to measure the river discharge with different techniques - to use modelling approaches to simulate river discharge and design methods to control flood risks. - to estimate hydrological model parameters by different methods - to understand stochastic hydrology concepts - to use stochastic models to calibrate and simulate river discharge
Evaluation methods	• 50% on practical reports • 50% on oral evaluation of theory
Teaching methods	- The lectures can be given in English, but illustrated by slights in French. A reference textbook in French supports the lectures. - Field practical work for river discharge measurments - Practical work in the computer room allow students to use advanced methods of hydrological modeling - The practical work and the reports are a executed in teams
Content	<u>Theory :</u> - Open channel hydraulics (8 hours) - Stochastic modeling in hydrology (8 hours) - Parameter estimation (4 hours) <u>Practicals:</u> - Flow discharge measurements in situ (3 hours) - Modeling exercises in computer room : • HEC-RAS (6 hours) • Stochastic modeling (6 hours)
Inline resources	Moodle
Bibliography	Ouvrage de référence : 'manuel technique d'HEC-RAS. Syllabus d'hydraulique- livre Hydrologie fréquentielle - une science prédictive (Meylan et al) Transparents des cours sur Moodle
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
Master [120] in Civil Engineering	GCE2M	3		
Master [120] in Environmental Bioengineering	BIRE2M	3		
Master [120] in Agriculture and Bio-industries	SAIV2M	3		