UCLouvain

lsged2210

2021

Hydrology of Tropical areas

2.00 credits	24.0 h	Q2

Teacher(s)	Alonso Alice (compensates Vanclooster Marnik) ;Jonard François (coordinator) ;Vanclooster Marnik (coordinator) ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Theoretical part Water resources issues in tropical areas - The state of the world's water resources - Current and future supply and demand - Pressures on water resources - Paradigms of water management Basic notions of hydrology - System approach to study watersheds. Hydrological balance (local / regional) Hydrological modeling - Characterization of basins and functional behavior - Typology of hydrological models - Modeling steps (identification / calibration / treatment of sensitivities and uncertainties) Hydrology and remote sensing - Notions of remote sensing - Principles of remote sensing to characterize hydrological processes at the regional scale (land use, thermal balance and evapotranspiration, gravimetry, precipitation, soil moisture) Practical part: Hydrological study of a reference basin - Construction of a hydrological database from generic data. - Modeling of hydrological flows with HEC-HMS. - Modeling management strategies in WEAP.
Learning outcomes	
Evaluation methods	• Students receive 3 assignments and hand in 3 reports of max. 2 pages on the student area of the course on MOODLE at a date set by the holder. • Students carry out a mini-project on the watershed of their home area.
Teaching methods	• Theoretical course: lectures in class room, supported by video clips. • Exercise part: Exercises in computer room using open source software (Python, QGIS, QGIS-SWAT, HEC-HMS, WEAP, ...) Due to lecture room capacity limitations related to the COVID crisis, some part of the course can be organised at distance.
Content	**Theoretical part** Water resources issues in tropical areas • The state of the world's water resources • Current and future supply and demand • Pressures on water resources • Paradigms of water management Basic notions of hydrology • System approach to study watersheds. Hydrological balance (local / regional) Hydrological modeling • Characterization of basins and functional behavior • Typology of hydrological models • Modeling steps (identification / calibration / treatment of sensitivities and uncertainties)

	Hydrology and remote sensing • Notions of remote sensing • Principles of remote sensing to characterize hydrological processes at the regional scale (land use, thermal balance and evapotranspiration, gravimetry, precipitation, soil moisture) **Practical part:Hydrological study of a reference basin** • Construction of a hydrological database from generic data (GEE platform) in QGIS. • Modeling of hydrological flows with HEC-HMS or QGIS-SWAT. • Modeling management strategies in WEAP.
Inline resources	• Course slights are available on Moodle. • An exercise manual is available on Moodle. • The generic data for the exercice is available in the computer class room • Video clips are available allowing to explain the data handling wiith the different software.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Agriculture and Bio-industries	SAIV2M	2		
Advanced Master in Environmental Sciences and Management in Developing Countries	SGED2MC	2		