


Language :	French
Place of the course	Louvain-la-Neuve
Main themes	<p>Theoretical part</p> <p>Water resources issues in tropical areas</p> <ul style="list-style-type: none"> <li>- The state of the world's water resources</li> <li>- Current and future supply and demand</li> <li>- Pressures on water resources</li> <li>- Paradigms of water management</li> </ul> <p>Basic notions of hydrology</p> <ul style="list-style-type: none"> <li>- System approach to study watersheds. Hydrological balance (local / regional)</li> </ul> <p>Hydrological modeling</p> <ul style="list-style-type: none"> <li>- Characterization of basins and functional behavior</li> <li>- Typology of hydrological models</li> <li>- Modeling steps (identification / calibration / treatment of sensitivities and uncertainties)</li> </ul> <p>Hydrology and remote sensing</p> <ul style="list-style-type: none"> <li>- Notions of remote sensing</li> <li>- Principles of remote sensing to characterize hydrological processes at the regional scale (land use, thermal balance and evapotranspiration, gravimetry, precipitation, soil moisture)</li> </ul> <p>Practical part:</p> <p>Hydrological study of a reference basin</p> <ul style="list-style-type: none"> <li>- Construction of a hydrological database from generic data.</li> <li>- Modeling of hydrological flows with HEC-HMS.</li> <li>- Modeling management strategies in WEAP.</li> </ul>
Learning outcomes	
Evaluation methods	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Students carry out a mini-project on the watershed of their home area.</li> </ul>
Teaching methods	<ul style="list-style-type: none"> <li>• Theoretical course: lectures in class room, supported by video clips.</li> <li>• Exercise part: Exercises in computer room using open source software (Python, QGIS, QGIS-SWAT, HEC-HMS, WEAP, ...)</li> </ul> <p>Due to lecture room capacity limitations related to the COVID crisis, some part of the course can be organised at distance.</p>
Content	<p><b>Theoretical part</b></p> <p>Water resources issues in tropical areas</p> <ul style="list-style-type: none"> <li>• The state of the world's water resources</li> <li>• Current and future supply and demand</li> <li>• Pressures on water resources</li> <li>• Paradigms of water management</li> </ul> <p>Basic notions of hydrology</p> <ul style="list-style-type: none"> <li>• System approach to study watersheds. Hydrological balance (local / regional)</li> </ul> <p>Hydrological modeling</p> <ul style="list-style-type: none"> <li>• Characterization of basins and functional behavior</li> <li>• Typology of hydrological models</li> <li>• Modeling steps (identification / calibration / treatment of sensitivities and uncertainties)</li> </ul> <p>Hydrology and remote sensing</p> <ul style="list-style-type: none"> <li>• Notions of remote sensing</li> </ul>

	<ul style="list-style-type: none"> <li>• Principles of remote sensing to characterize hydrological processes at the regional scale (land use, thermal balance and evapotranspiration, gravimetry, precipitation, soil moisture)</li> </ul> <p><b>Practical part:Hydrological study of a reference basin</b></p> <ul style="list-style-type: none"> <li>• Construction of a hydrological database from generic data (GEE platform) in QGIS.</li> <li>• Modeling of hydrological flows with HEC-HMS or QGIS-SWAT.</li> <li>• Modeling management strategies in WEAP.</li> </ul>
<p>Inline resources</p>	<ul style="list-style-type: none"> <li>• Course slights are available on Moodle.</li> <li>• An exercise manual is available on Moodle.</li> <li>• The generic data for the exercice is available in the computer class room</li> <li>• Video clips are available allowing to explain the data handling wiith the different software.</li> </ul>
<p>Faculty or entity in charge</p>	<p>AGRO</p>

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Advanced Master in Environmental Sciences and Management in Developing Countries	SGED2MC	2		
Master [120] in Agriculture and Bio-industries	SAIV2M	2		