

3.0 credits	20.0 h	2q
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Teacher(s) :	Soares Frazao Sandra ; Zech Yves ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	Forecasting of high and low water levels : empirical methods, statistical methods. Discharge regulation : reservoir management (damping of peaks and flood routing, simulation of operations, reservoir sedimentation) ; mitigation of floods induced by dam releases. Flood protection : floodplain management. Flood propagation ; flood modelling.
Aims :	Introduce engineers and hydrologists to the issues associated with high and low water levels : forecasting, regulation and mitigation, training works <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Content :	<ul style="list-style-type: none"> <li>- Introduction to flood-related issues :                             <ul style="list-style-type: none"> <li>* Causes for flooding</li> <li>* Worsening factors</li> <li>* Flood risk management</li> </ul> </li> <li>- Forecasting of high and low water levels :                             <ul style="list-style-type: none"> <li>* Empirical methods : method based on time series, catchment-based methods</li> <li>* Statistical methods : reminders</li> <li>* Determination of flood discharges based on extreme rainfall data : 'Gradex' method</li> </ul> </li> <li>- Discharge regulation :                             <ul style="list-style-type: none"> <li>* Reservoir management : Damping of peaks and flood routing, Simulation of exploitation : Cumulative discharge curve, stochastic modelling (lognormal model, seasonal autoregression model of Fiering), Reservoir sedimentation : critical silting discharge, evolution of sediments characteristics, sedimentation modelling</li> <li>* Mitigation of floods induced by hydropower</li> </ul> </li> <li>- Flood protection :                             <ul style="list-style-type: none"> <li>* Catchment management</li> <li>* Embankments</li> <li>* Floodplains management</li> </ul> </li> <li>- Flood propagation                             <ul style="list-style-type: none"> <li>* Flood routing (Muskingum method)</li> <li>* Flood modelling (Flood cells method)</li> </ul> </li> <li>- Droughts and low water levels                             <ul style="list-style-type: none"> <li>* Framework : origin and worsening factors</li> <li>* Prediction of low water levels</li> <li>* Analysis of dry seasons and droughts</li> </ul> </li> </ul>
Other infos :	<ul style="list-style-type: none"> <li>- Complementary topic for theme "Environment" and optional topic for theme "Hydraulics"</li> <li>- Prerequisites : AMCO 2151 "General and statistical hydrology ", and preferentially AMCO 2152 "Hydraulics" or equivalent</li> <li>- Evaluation : oral examination</li> </ul>
Cycle and year of study :	> <a href="#">Master [120] in Civil Engineering</a>
Faculty or entity in charge:	GC