UCL Université catholique de Louvain

LAUCE2151

2010-2011

Hydraulique appliquée

4.0 credits	25.0 h + 22.5 h	1q

Teacher(s) :	Zech Yves ;
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	- Open-channel hydraulics - Theory of weirs - Introduction to scale models and hydraulic measurements in laboratory
Aims :	- Knowledge and understanding of fluvial processes with the aim of designing fluvial works *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".*
Content :	- Introduction: field of application of Fluvial Hydraulics, types of rivers, basic elements in morphodynamics (2 hours) - Free-surface flow : canals, sewers and rivers (16 hours) * Uniform flow : Chézy and Manning equations, optimal section, compound and composite channels, uniform-depth calculation in canals and sewers * Gradually varied flow : specific energy, critical depth, critical slope, water profiles: theory et practical calculation * Flow in natural rivers: pseudo-uniform flow * Suddenly varied flow : hydraulic jump, submerged hydraulic jump * Flows in natural rivers: pseudo-uniform flow * Flow in irregular geometry: Flow between a bottom outlet and a reservoir, Changes in bed slope, Changes in the channel width and obstacles: bridges and dam piers, Venturi channels, bottom sills, broad crested weir * Flow in rivers with floodplains - Theory of weirs (5 hours) * Stability of weir flows * Sharp crested weirs * Creager broad crested weirs * Spillways * Side spillways - Introduction to scale models and hydraulic measurements in laboratory (2 hours)
Other infos :	- Prerequisite: AUCE 1152 "Hydraulics" - Pedagogy: mix of lectures, practical and lab work - Evaluation: Exercise examination at the end of the semester (25 % of total); oral examination (75 % of total) - Support: syllabus
Cycle and year of study :	> Master [120] in Civil Engineering
Faculty or entity in charge:	GC