

# GEOS8AC HYDROSYSTEMS and THE ENVIRONMENT

GEOS8AC		ECTS Credits : 2		Semester : S8	
Hydrosystems and the environment		Duration : 21 hours			
Person(s) in charge :					
Michel JAUZEIN, Professor, <a href="mailto:michel.jauzein@mines-nancy.univ-lorraine.fr">michel.jauzein@mines-nancy.univ-lorraine.fr</a>					
Keywords : hydrogeology, hydrodynamics, Waters, Fluids, Flows, Subterranees, Transport					
Prerequisites : Basics in geology					
Objective :					
Knowledge of aquifers. Understanding of subterranean waters flow processes					
Program and content:					
<div>1. RAIN : A fractal atmospheric signal ?</div> <div>2. SOILS : A hydric reserve of continental interfaces?</div> <div>3. AQUIFERS : Subterranean way of water transfers?</div> <div>4. PERMEABILITY : a simple parameter to characterize aquifers ?</div> <div>5. DIFFUSIVITY : An efficient notion to analyse transient phenomena ?</div> <div>6. DISPERSIVITY : A simple parameter to approach the solute transport?</div> <div>7. FRACTURATION : Complexity or opportunity ?</div>					
Abilities:					
Levels		Description and operational verbs			
Know		Notion of aquifers and subterranean waters. Orders of magnitude of permeability, porosity of rocks and terranes. Main processes concerning water and solute transfers in the subterranean terranes.			
understand		Link between the geological context and the fluid flows within subterranean terranes. Tools of hydrogeological modelisation. Concepts of porosity and permeability of subterranean terranes.			
Apply		Quantitative and qualitative management of subterranean water resources. management of the water cycle in urban or natural area, in the case of civil engineering and industries (mines, oil industry, carreers, geothermy, etc.)			
Analyse		Analyse a a flow case study, choose the efficient parameters to evaluate the flow and time transfers.			
Summarise		A regional water resource, challenges and risks. Risks linked to the fluid flow management.			
Assess		Velocities and fluid flows. Risks of pollution, time of flooding			
Evaluations :					
<input checked="" type="checkbox"/> Written test		<input checked="" type="checkbox"/> Continuous control		<input type="checkbox"/> Oral report	
				<input type="checkbox"/> Project	
				<input type="checkbox"/> Written report	