

1nd part of Semester 3, UPC

Global warming effects, Flood and Drought Management.						
		3 ECTS Credit Points				
Mentor:	A. Bateman					
Tuition form & study load:	<i>Topic</i>	<i>Contact hours</i>			<i>Study load [hrs]</i>	<i>Examination/weight</i>
		<i>Lecture</i>	<i>Exercise</i>	<i>Workshop</i>		
	Climate change effects on hydrological cycles.	2	2	4	10	Exercises reports on three topics (10%)
	Drought management.	5	5	10	20	(30%)
Water resources management on climate change scene.	3	3	8	15	(20%)	
	(total contact hours 42)				Total 87	& oral exam (40%)
Pre-requisites:	Hydrology and Hydraulics; Fluid dynamics, information technology and computer science; Flash Flood, Drought and Climate change; Information management and numerical methods					
Learning objectives:	Description of global warming and the hydrological consequences into a river basin is presented to the student; river flows and water resources. Assess the effect of climate change due to green effect mechanism. Change in water resources and river flows over time and finally changes in water quality. A short introduction of drought assessment and management affected by the global warming effect is studied. Hydrological and meteorological droughts assess. Study of climate generators its utilities and difficulties					
Content:	<ul style="list-style-type: none"> – Global warming and the impact on river flows and water resources. – What is Climate Change? The green house effect, climate change and the hydrological processes. – The green house effect, climate change and the hydrological processes in Flood, FF and DF forecasting. – Changes in water resources, Changes in Flow regimes, implications of water management. – Global Warming and Hydrological Uncertainty – River flood management – Evaluation of Meteorological Drought – Evaluation of hydrologic drought – Drought in water management – Parametric and no parametric climate generators 					
Course structure:	<ol style="list-style-type: none"> 1. Conventional class activities 2. Optional seminars 3. Personal course work will consist in a selection, review and final report of a selected research paper regarding radar topic and application in hydrologic problems. The student may read, understand and redact a summary-report on the topic. Finally, the student will present the paper and the report in public. The amount of hours will depend on followed seminars. 4. Round tables will be planned to discuss the results of the home work. 					
Didactics	Formal lectures; classroom exercises; home assignments; exercises & workshops in computer lab					
Additional reading:						