

Subject name	Risk management in Nature 2000 sites under condition of flooding	
Subject code	IS-RMN-19	
Department	Hydraulic Engineering and Geotechnics	
Faculty	Environmental Engineering and Land Surveying	
Subject supervisor/Lecturer	Jacek Florek, Ph.D.	
General information	Teaching period	summer or winter semester
	ECTS credit	6
	Lectures total	15
	Seminars	30
Objective and general description	<p>The aim of the course is to address problem of different approaches to the Nature 2000 sites with the prospect of plant and animal protection and the necessity of flood protection. General problem is to find the best compromise and to manage the flood risk protection and in the mean time to handle the Nature 2000 sites according to their particular protection programs. Fluvial processes of the river reach are involved. Critical parameters of flood events in the river bed are taken in to the calculation and use of numerical modeling is involved.</p>	
Lectures 15 hours	<ol style="list-style-type: none"> 1. Flood and high water stage, characteristics and differences. Why is the flood protection needed. What are the aims and tools. 2. Objectives of the Nature 2000 sites and how are they impacted by the flood. 3. The conflict between needs of the nature and the flood protection technique. Critical elements. 4. Impact of public opinion on legislation and predicted changes. 5. EU flood risk recognition over the time in face of global prediction of changes. Nature protection. 	
computer Lab practicals 30 hours	<ol style="list-style-type: none"> 1. Introduction to the modeling of flood risk zones. 2. Creating 1d model for the purpose of flood risk zone creation. 3. Preparing data: cross section introduction. 4. Setting up parameters of the model. 5. Calculating the water levels of the model. 6. Analysis of the situation in river: finding out the critical locations (cross-sections from the 1d model results and islands on the digital orthophoto map). 7. Finding the Nature 2000 site information and qualifying the dates for the breeding season. 8. Water levels frequency estimation. 9. Analysis of the risk in critical locations. 10. Risk calculation, risk management and the estimation of water training techniques impact on the Nature site. 	
Literature	<ol style="list-style-type: none"> 1. Bartnik W., Florek J. 2005. The estimation of hydrodynamical bed stability of the mountain stream and rivers in Polish 	

	<p>Carpathian region. IMGW Warsaw.</p> <ol style="list-style-type: none"> 2. Bartnik F., Florek J., Wrona P., 2006. Catastrophic flow conditions in middle delta of Nida River. AR Wrocław Scientific Notebook. No 534. Environment Series XV. 3. Florek J., Książek L., Śmiałek D., Radecki P. 2007. Characteristic of granulometric composition along chosen sand-gravel dunes within the Raba river outlet. Nr 3/2007, Polish Academy of Science., Technical Infrastructure in rural areas. p. 197-207. 4. Książek L., Wyřebek M., Strutyński M., Strużyński A., Florek J., Bartnik W. 2010. Application of 1d models (HEC-RAS, MIKE 11) to designate flood hazard areas on the Lubcza river, the Wislok basin. Polish Academy of Science., Technical Infrastructure in rural areas. No 8/1/2010, p.29. 5. http://ec.europa.eu/environment/nature/natura2000/index_en.htm 6. http://eeagrants.org/
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