Subject name	**River Training Close to Nature**	
Subject code	IS-RTN-20	
Department	Hydraulic Engineering and Geotechnics	
Faculty	Environmental Engineering and Land Surveying	
Subject supervisor/Lecturer	Andrzej Strużyński, Ph.D.	
General information	Teaching period	winter or summer semester
	ECTS credit	6
	Lectures total	15
	Lab practical	30
Objective and general description	During this subject students will get the knowledge about the close-to-nature river training. As long as the Water Frame and Flood directives are in force, the new river structures and river training methods are introduced. The main objective of the course is understanding which practices can be used in different parts of rivers.	
Lectures **5 x 3 hours**	**1.** Hydrological introduction **2.** Water Framework Directive **3.** Fluvial processes in natural rivers **4.** Hydromorphological characteristics of rivers **5.** Hydraulic parameters of water flowing in river channels. River dynamics and riverbed stability. **6.** Close to nature river structures **7.** Methods of river training close to nature **8.** The examples of river naturalization projects	
Lab practicals **10 x 3 hours**	1. Evaluation of the river restoration - Problem 1 2. Evaluation of the river restoration - Problem 2 3. Evaluation of the river restoration - Problem 3	
References	*Przedwojski et. al*., 2000, River training techniques. A. Strużyński, W. Bartnik, 2008, Flood protection in high valued river ecosystem – Middle Delta system of the Nida River, Electronic Journal of Polish Agricultural Universities, manuscript *W. Bartnik, K. Banasik, L. Książek, A. Radecki-Pawlik, A. Strużyński*, 2005, Forecasting of fluvial processes on the Skawa River within back-water reach of the Świnna Poręba reservoir, Publications of the Institute of Geophysics, Polish Academy of Sciences, Computational modeling for the developement of sustainable water-resources systems in Poland, US-Poland Technology Transfer Program, monographic volume E-5 (387),ISBN 83-88765-59-0, ISSN 0138-0117, Warszawa 57-85. *Mokwa M., tymków P., Wężyk P.,* 2009, Identification of flow resistance coefficients in floodplain forests using terrestrial laser scanning, Studia Geotechnica et Mechanica, Vol. XXXI, No. 1	