

Subject name	Ecohydraulics and fish migration structures	
Subject code	IS-EFL-3	
Department	Hydraulic Engineering and Geotechnics	
Faculty	Environmental Engineering and Land Surveying	
Subject supervisor/Lecturer	Leszek Książek, Agnieszka Woś, Marek Tarnawski, Andrzej Strużyński, Mateusz Strutyński	
General information	Teaching period	winter or summer semester
	ECTS credit	6
	Lectures total	15
	Lab practical	30
Objective and general description	The aim of the course is to familiarize with problems related to the rivers restoration in connection with diadromic fish, determination and preparing gravel habitats in the river bed.	
Lectures 7x2+1 hours	The student knows the criteria and priorities of rivers selection to do the restoration projects, knows the fishing management in the area of the Upper Vistula, principles of engineering technical fishpasses and fishpasses close to nature, bottom stability and the need to maintain continuity of the river. The student knows also the way of assignment of habitat by using hydraulic model to determine the hydraulic conditions in biological fishpasses.	
Lab practicals 15 x 2 hours	Knows how to design basic parameters passes close to nature and designate a hydraulic habitat for fish. Know how to perform numerical modelling of flow conditions in fishpasses.	
References	<ol style="list-style-type: none"> 1. Lubieniecki B., 2003, Przepławki i drożność rzek, Instytut Rybactwa Śródlądowego, Olsztyn, 2. Wiśniewolski W., Mokwa M., Ziola S., 2008, Migracje ryb – przyczyny zagrożenia i możliwości ochrony, Ochrona ichtiofauny w rzekach z zabudową hydrotechniczną, Monografia pod redakcją Mokwy M. i Wiśniewolskiego W., Dolnośląskie Wydawnictwo Edukacyjne, Wrocław, s.9-19 3. Praca zbiorowa, Gospodarka rybacka w aspekcie udrażniania cieków dorzecza Małej i Górnej Wisły, 2011, (ed) Piotr Epler, Leszek Książek, Zesz. Nauk. Infrastruktura i Ekologia Terenów Wiejskich, Komis. Tech. Inf. Wsi PAN, Seria Monografie, 13, 	