Department of Civil and Environmental Engineering					
Study programme:	**Environmental Engineering**	Degree level: full-time/part-time programme:		**Bachelor's degree / Master's degree /Doctoral degree**	
Specialization	**Subject common**	Diploma path:		**-**	
Module name:	Water management and water protection				
Module type:	**obligatory**	Semester: **V**	ECTS **5**	Module ID:	
No. of hrs in semester:	L - 15 C - 0 LC- 30 P- 15 SW- S-				
Prerequisites:	*Complete with prerequisites or "-"*				
Teaching methods:	*lecture, class, laboratory class, project, seminar, specialization workshop*	*Assessment:*	*Evaluation must be relevant to the intended learning outcomes*		
		Lecture - two written tests; Laboratory - assessment reports, preparation for exercise tests, quizzes; project - the execution of 2 projects, defense projects			
Aims and objectives:	*Understanding hydrological phenomena and processes. Extension of messages on the resources and classification of water, sources of pollution and protection of waters against pollution. Provide knowledge on the importance of the problem of rational use of water resources. Presentation of the scale and impact of human activities on the aquatic environment and how to minimize them.*				
Module content:	*Complete with module content: To familiarize students with the basics of formalo - legal protection of waters in Poland and instruments water management (water permit, water cadastre). Learning how water classification, methods of assessing the purity of rivers, lakes and reservoirs, as well as the development of documentation on the obtained engineering tasks. Preparation of information on the results of the projects in the form of a multimedia presentation. Education rules and skills of application of the measuring apparatus. Learning the basics of laboratory testing physico - chemical water. Self executing outsourced functions, and the ability to work in a team. Preparation of results, discussion, interpretation, and to compare them to the literature.*				

Learning outcomes	*Write min. 4, max. 8 learning outcomes in the following order: knowledge - skills - competences. Each learning outcome must be verifiable.*	*Relevance to the programme learning outcomes*
LO1	student identifies and summarizes the current state of knowledge about water management and development of the latest trends in water protection	K_W08
LO2	student formulates knowledge and uses it to evaluate the effect of different sources of pollution at the receiver	K_W013
LO3	student knows how to play and to describe their knowledge associated with the classification of water, sources of pollution and the protection of waters against pollution	K_W014

LO4	The student can independently carry out the task and współpracowaćw commissioned a team to analyze the current situation and assess the impact of human activities on the aquatic environment	K_U03	
LO5	the student can has developed documentation about the implementation of the resulting tasks and prepare to discuss the results and prepare a short presentation of the results	K_U04, K_U05	
LO6	students are able to take advantage and use a properly chosen methods and devices, enabling measurement of basic physico - chemical water	K_U11	
LO7	the student is aware of the effects of anthropogenic human activity and its impact on the environment	K_K02	
LO8	the student is aware of the responsibility for their own work and obser	K_K04	
student workload	Participation in lectures	15 x 1h =	15
	Participation in laboratory classes + design	15 x 3h =	45
	Preparation for tutorials / lab / seminar	10 x 1h =	10
	Develop reports from the laboratory or workshop and / or completion of homework assignments (homework)	10 x 1h =	10
	Participation in the consultations related to the exercise / seminar / project	5 x 1h =	5
	mplementation of the project tasks (including preparing presentations)	20 x 1h =	20
	Preparation for the exam / credit and the presence on it		20
	Preparing to pass exercises + presence during tests		10
		TOTAL:	135
quantitative indicators	Student workload - activities that require direct teacher participation	65	ECTS 3
	Student workload - practical skills activities	100	3,5
basic references:	*Chełmicki W.: Woda. Zasoby, degradacja, ochrona. Wydawnictwo Naukowe PWN, Warszawa 2001Poskrobko B., Poskrobko T., Skiba K.: Ochrona biosfery. Polskie Wydawnictwo Ekonomiczne. Warszawa 2007Mikuliński Z.: Gospodarka wodna. Dojlido J.: Leksykon: zanieczyszczenie i ochrona wód. Ofic. Wyd. Szkoły Ekol. i Zarządz., W-wa 2006 Wydawnictwo Naukowe PWN, Warszawa 1998*		
supplementary references:	*Hermanowicz W.: Fizyczno - chemiczne badanie wody i ścieków. Wydawnictwo Arkady, Warszawa 1999; Szczykowska J.E., Siemieniuk A.: Chemia wody i ścieków. Podstawy teoretyczne i praktyczne. Oficyna wydawnicza Politechniki Białostockiej, Białystok 2010*		
learning outcomes	*methods of assessing learning outcomes*	type of class (if more than one) where the outcomes are assessed	
LO1	qualifying colloquium lecture	L	
LO2	qualifying colloquium lecture, preparation of materials for the project	L,P	

LO3	qualifying colloquium lecture, preparation of materials for the project	L,P
LO4	preparation for laboratory, lab report on the exercise., preparation of materials and calculations for the project	P, LC
LO5	qualifying colloquium lecture, preparation of materials for the project, a report from the lab exercises.	P,LC, L
LO6	preparation for laboratory, lab exercises report.	LC
LO7	qualifying colloquium lecture, preparation of materials for the project, a report from the lab exercises.	P,LC, L
LO8	discussion on the project / report from the lab, working in the classroom observation	P, LC

Department:	Department of Engineering and Technology in Environmental Protection	Group instructors:	*dr inż. Anna Siemieniuk*
Date:	2017.11.15	Coordinator:	*dr inż. Anna Siemieniuk*

L - lecture C - class LC - laboratory class P-project
SW - specialization workshop S - seminar