

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	POLLUTANT TRANSFER PHENOMENON, PG_00048952								
Field of study	Green Technologies								
Date of commencement of studies	February 2025		Academic year of realisation of subject			2024/2025			
Education level	second-cycle studies		Subject group			Optional subject group			
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			English			
Semester of study	1		ECTS credits			3.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Department of Hydraulic Engineering -> Faculty of Civil and Environmental Engineering								
Name and surname	Subject supervisor		dr inż. Patrycja Mikos-Studnicka						
of lecturer (lecturers)	Teachers								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	0.0	15.0		0.0	30	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	In in didactic Participation in consultation hours		n ours	Self-study		SUM	
	Number of study hours	30		5.0		40.0		75	
Subject objectives	The aim of the subject is to introduce students to the flow and transport phenomena and their mathematical description.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K7_W04] identifies chemical and biological threats to the environment, taking into account anthropogenic factors		Student has the knowledge on the Streeter-Phelps model.			[SW1] Assessment of factual knowledge			
	[K7_U03] solves design tasks in the field of environmental protection technologies, taking into account their non-technical, environmental, economic and legal aspects as well as occupational health and safety principles		Student has the ability to connect the mathematical and technical aspects of the subject with the enviromental aspects.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools			

Subject contents	1. Fluid mechanics as an engineering field							
	2. Scalar quantities and fields							
	3. Vector quantities and fields							
	4. Tensor quantities and fields							
	5. Vector analysis and basics of the tensor analysis							
	6. Differential operators (Grad, Div, Rot), material derivative							
	7. Description of the heterogenous systems							
	8. Movement (flow) description methods							
	9. Phenomenological method, conservation principles							
	 10. Phenomenological method - practical remarks 11. Phenomenological method - averaging 12. Introduction to numerical methods 							
	13. Numerical methods (derivatives and integrals, accuracy)							
	14. Numerical methods (solution of differential equations)							
	15. Test							
Prerequisites	Basic mathematical analysis, geometry and physics							
Assessment methods	Subject pagaing criteria	Dessing threshold	Dereentage of the final grade					
and criteria	Projects	100.0%	50.0%					
	Test	60.0%	50.0%					
Recommended reading	Basic literature	Heat and Mass Transfer, second ed., Baehr, H., D., Stephan, K., 2006.						
	Supplementary literature	Heat and Mass Transfer, second ed., Baehr, H., D., Stephan, K., 2006. Springer-Verlag, Berlin.						
	eResources addresses	es addresses Adresy na platformie eNauczanie:						
Example issues/ example questions/ tasks being completed	Solution of the diffusion equation							
	Using streeter-Phelps model for determination of solved oxygen in water.							
Work placement	Not applicable							

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