



Subject card

Subject name and code	POLLUTANT TRANSFER PHENOMENON, PG_00048952						
Field of study	Green Technologies						
Date of commencement of studies	February 2027		Academic year of realisation of subject		2026/2027		
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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Patrycja Mikos-Studnicka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	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 didactic classes included in study plan		Participation in consultation hours		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	Course content – lecture		
	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 and co-requisites	Basic mathematical analysis, geometry and physics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	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. Springer-Verlag, Berlin.	
	Supplementary literature	Heat and Mass Transfer, second ed., Baehr, H., D., Stephan, K., 2006. Springer-Verlag, Berlin.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Solution of the diffusion equation		
	Using streeter-Phelps model for determination of solved oxygen in water.		
Practical activites within the subject	Not applicable		

Document generated electronically. Does not require a seal or signature.