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 of lecturer (lecturers)	Subject supervisor	dr inż. Patrycja Mikos-Studnicka	
	Teachers		

Lesson types and methods of instruction

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

<table>
<tr><td>Subject contents</td><td>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</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic mathematical analysis, geometry and physics</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Projects</td><td>100.0%</td><td>50.0%</td></tr>
<tr><td>Test</td><td>60.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Heat and Mass Transfer, second ed., Baehr, H., D., Stephan, K., 2006. Springer-Verlag, Berlin.</td></tr>
<tr><td>Supplementary literature</td><td>Heat and Mass Transfer, second ed., Baehr, H., D., Stephan, K., 2006. Springer-Verlag, Berlin.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Solution of the diffusion equation

Using streeter-Phelps model for determination of solved oxygen in water.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
</table>

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