



Subject card

Subject name and code	Fluid mechanics , PG_00042807						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
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		prof. dr hab. inż. Jerzy Sawicki				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	0.0	0.0	45
	E-learning hours included: 0.0						
Adresy na platformie eNauczanie: Mechanika płynów - Moodle ID: 22952 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22952">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22952</a>							
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	45	5.0	50.0	100		
Subject objectives	Presentation of the basic course of hydromechanics, necessary in the environmental engineering.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W15] knows and understands the methods of measuring basic quantities characteristic for fluid mechanics and hydraulics, hydrology; knows the calculation methods and IT tools necessary to analyze the results of laboratory and field work	Student knows, understands and is able to apply methods of measurements of basic hydromechanic parameters and knows the methods of the data analysis.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K6_U02] can work individually and in a team; knows how to estimate the time needed to complete the task ordered; is able to develop and implement a work schedule that ensures deadlines	Student is able to work individually and in a group of specialists, according to the schedule.			[SU1] Assessment of task fulfilment		
	[K6_K01] can think and act in a creative and enterprising way; can set priorities for the implementation of an individual or group task; understands the need for continuous training and professional responsibility for their activities and team	Student is able to cooperate in a technical team. He understands the question of responsibility in the professional work.			[SK1] Assessment of group work skills		
	[K6_W05] knows the theoretical basis of hydromechanics and its practical models, necessary to solve technical problems in the field of environmental engineering (sanitary engineering, water melioration, water management and flood protection, pollution spread)	Student has the necessary resource of the knowledge and is able to use the methods of the fluid-flow problems solving.			[SW1] Assessment of factual knowledge		

Subject contents	The concept of continuity and fluidity. Kinematics of fluids (velocity, stream line, trajectory, Helmholtz theorem). The laws of mass and momentum conservation. Newton's hypothesis. Equation of continuity and Navier-Stokes equation. One-dimensional stream of the fluid. Hydrostatics. Bernoulli's equation. Turbulence (Reynolds equation). Buckingham theorem.		
Prerequisites and co-requisites	Polytechnical course of mathematics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	70.0%
	Control tests	60.0%	30.0%
Recommended reading	Basic literature	1. Sawicki J.M., "Mechanika przepływów", Wydawnictwo PG, Gdańsk 2009. 2) Orzechowski Z., Prywer J. Zarzycki R., "Mechanika płynów w inżynierii środowiska", WNT, Warszawa 1997.	
	Supplementary literature	1. Walden, H., Stasiak J., "Mechanika cieczy i gazów w inżynierii sanitarnej", Arkady, Warszawa 1971.	
	eResources addresses	Mechanika płynów - Moodle ID: 22952 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=22952">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=22952</a>	
Example issues/ example questions/ tasks being completed	The method of the fluid-flow description, applied in hydromechanics. Basic concepts and problems of hydrostatics. Bernoulli's theorem.		
Work placement	Not applicable		