



Subject card

Subject name and code	Fluid Mechanics, PG_00049759						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	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	2	Language of instruction			English		
Semester of study	4	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Hydromechanics and Hydroacoustics -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Krężelewski					
	Teachers	Przemysław Król dr inż. Marzena Banaszek dr inż. Michał Krężelewski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	15.0	0.0	0.0	75
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie: Fluid Mechanics, PG_0004975 laboratory 2022 - Moodle ID: 22776 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22776						
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	75	10.0	65.0	150		
Subject objectives	The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of Fluid Mechanics and can apply them to practical problems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W02	The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of Fluid Mechanics and can apply them to practical problems.			[SW1] Assessment of factual knowledge		
	K6_K01	The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of Fluid Mechanics and can apply them to practical problems.			[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	<p>Properties of fluids. Mass and surface forces in fluids. Equations of fluid motion. The Bernoulli equation. Hydrostatic lift. Pressure distribution calculations. Flow in pipes. The similarity of flows and modeling laws. Basic field theory. Field operators: gradient, velocity flux, divergence, rotation and circulation of velocity. Basic wing theory: geometrical and dynamic characteristics of foils. Potential flows.</p> <p>Laboratory: flow visualization. Reynolds experiment for laminar and turbulent flow. Energy losses in pipe flow. Pressure distribution around a circular cylinder. Flow through orifices. Flow rate measurement in a pipe flow. Orifice, nozzle and Venturi flow rate meters.</p> <p>Exercises: tasks and issues concerning the content of the lecture.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	100.0%	33.0%
	Exercises	50.0%	33.0%
	Lecture	50.0%	34.0%
Recommended reading	Basic literature	<p>Cengel Y.A, Cimbala J.M. Fluid Mechanics Fundamentals and Applications, McGraw Hill</p> <p>White F. M. Fluid Mechanics, McGraw-Hill</p>	
	Supplementary literature	<p>Prieve D. C. A Course in Fluid Mechanics with Vector Field Theory, Carnegie Mellon University, Fall 2000</p>	
	eResources addresses	<p>Fluid Mechanics, PG_0004975 laboratory 2022 - Moodle ID: 22776 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22776</p>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		