



Subject card

Subject name and code	Fundamentals of fluid mechanics, PG_00039952						
Field of study	Management and Production Engineering, Management and Production 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		Polish -		
Semester of study	4		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Krzysztof Tesch				
	Teachers		dr inż. Marzena Banaszek dr inż. Wojciech Włodarski prof. dr hab. inż. Krzysztof Kosowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
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 objective of the course is to provide basic information about fluid mechanics, which will be useful in the work of an engineer.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U02		The student has the ability to self-educate and expand his specialization knowledge in the field of production engineering		[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_W04		The student has basic knowledge in the field of automation, robotics and control of production processes, and has elementary knowledge of electrical and electronic applications in the production system, has basic knowledge of thermodynamics and fluid mechanics as well as the selection and design of hydraulic and pneumatic systems		[SW1] Assessment of factual knowledge		

Subject contents	Lecture: 1. Differential operators 2. Stream lines, trajectories, acceleration 3. Deformation of the fluid element 4. conservation equations 5. Constitutive equations for Newtonian and Newtonian fluids including blood. 6. Governing equations describing fluid motion. 7. Introduction to turbulence modelling LABORATORY: Flow visualization. Outflow from holes. Measurement of flow rates in open channels and in pipelines. Study of the flow in the aerodynamic tunnel. Modelling of gas flows by hydrodynamic analogy.		
Prerequisites and co-requisites	Mathematics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	50.0%
	Exam	50.0%	50.0%
Recommended reading	Basic literature	Tesch K., "Mechanika Płynów", Wyd. PG, 2008, 2013	
	Supplementary literature	Puzyrewski R., Sawicki J., "Podstawy Mechaniki Płynów i Hydrauliki", PWN, 1998	
	eResources addresses		
Example issues/ example questions/ tasks being completed	-		
Work placement	Not applicable		