

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Numerical Fluid Mechanics - CFD for engineers, PG_00056270								
Field of study	Design and Construc	tion of Yachts							
Date of commencement of studies	October 2022		Academic year of realisation of subject			2024/2025			
Education level	first-cycle studies		Subject group						
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	3		Language of instruction			Polish			
Semester of study	6		ECTS credits			3.0			
Learning profile	practical profile		Assessment form			assessment			
Conducting unit	Institute of Naval Arcl	culty of Mechar	ty of Mechanical Engineering and Ship Technology						
Name and surname	Subject supervisor		dr inż. Michał Krężelewski						
of lecturer (lecturers)	Teachers		dr inż. Michał	_					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory Projec		t	Seminar	SUM	
	Number of study hours	15.0	0.0	0.0	30.0		0.0	45	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation h	n ours	Self-study		SUM	
	Number of study hours	45		5.0				75	
Subject objectives	learning methods for the integration of partial differential equations and their application to the self-selected examples								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	К6_К03		The student recognizes basic CFD problems. He uses the methods of numerical fluid mechanics and applies them in practice.			[SK5] Assessment of ability to solve problems that arise in practice			
	K6_U05		The student recognizes basic CFD problems. He uses the methods of numerical fluid mechanics and applies them in practice.			[SU5] Assessment of ability to present the results of task			
	K6_W06		The student recognizes basic CFD problems. He uses the methods of numerical fluid mechanics and applies them in practice.			[SW3] Assessment of knowledge contained in written work and projects			
	K6_W05		The student recognizes basic CFD problems. He uses the methods of numerical fluid mechanics and applies them in practice.			[SW3] Assessment of knowledge contained in written work and projects			
Subject contents	Lecture: Overview of numerical fluid mechanics (CFD). Equations governing fluid flow and boundary conditions. Turbulence and its modeling. Methods for solving the discretized governing equations in fluid mechanics.Computational methods considering flows with free surface. Computational methods for potential flows. Project: Modeling of simple flows with RANSE-CFD and comparison of results with theory. Lift and drag force on the wing, flow through a venturi tube. Study of the influence of the size of the computational domain, mesh density and boundary conditions on the obtained results.								
Prerequisites and co-requisites	Yacht hydromechanics								

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade		
	Lecture	60.0%	50.0%		
	Project	100.0%	50.0%		
Recommended reading	Basic literature	ic literature Gdańskiej, Gdańsk 2021. Versteeg H. K.,Malalasekera W., An introduction to Computa Fluid Dynamic, Longman 1995-98. Gryboś R.: Podstawy mechaniki płynów, t.1,2, PWN W-a 19			
	Supplementary literature	Krężelewski M. Hydromechanika ogólna i okrętowa, tom II, Skrypt Politechniki Gdańskiej, Gdańsk 1982			
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed					
Work placement	Not applicable				

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