



Subject card

Subject name and code	Yacht Hydromechanics, PG_00056254						
Field of study	Design and Construction of Yachts						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group				
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	practical profile		Assessment form		assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Krężelewski				
	Teachers		dr inż. Maciej Reichel				
			dr inż. Michał Krężelewski				
			mgr inż. Hanna Pruszeko				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		5.0		25.0	75
Subject objectives	The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of hydromechanics and can apply them to sailing and motor yachts.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_W05		The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of hydromechanics and can apply them to sailing and motor yachts.		[SW1] Assessment of factual knowledge		
	K6_U05		The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of hydromechanics and can apply them to sailing and motor yachts.		[SU4] Assessment of ability to use methods and tools		
	K6_W03		The student recognizes basic problems connected with flows and flows around bodies. Uses the laws and methods of hydromechanics and can apply them to sailing and motor yachts.		[SW1] Assessment of factual knowledge		
Subject contents	Surface forces. Boundary layer and hydrodynamic wake. The similarity of flows and modeling laws. Sailing and motor yachts resistance. Basic field theory. Field operators: gradient, velocity flux, divergence, rotation and circulation of velocity. Mass conservation equation. Basic wing theory: geometrical and hydrodynamic characteristics of foils, Kutta - Joukowski theorem. Motion of fluids: Lagrange and Euler approach. Navier-Stokes equation. Reynolds Average Navier Stokes equations (RANS). Turbulence and its models. Basics of Computational Fluid Dynamics (CFD). Potential flows. Gravity waves.						
Prerequisites and co-requisites	Fluid Mechanics						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Lecture		50.0%		50.0%		
	Laboratory		100.0%		50.0%		

Recommended reading	Basic literature	Dudziak J. Teoria Okrętu, 2008 Gdańsk Krężelewski M. Hydromechanika ogólna i okrętowa, skrypt PG Tom I , II, Gdańsk 1982
	Supplementary literature	Journee J., Massie W. Offshore Hydromechanics, Delft University of Technology, January 2001 Newman J.N., Marine Hydrodynamics, MIT Press, 2017
	eResources addresses	Adresy na platformie eNauczanie: Hydromechanika Jachtu, W, L, sem 4, rok akademicki 2023/2024 (PG_00056254) - Moodle ID: 37964 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37964
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	