



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	