



Subject card

Subject name and code	, PG_00062010						
Field of study	Mechanical and Naval Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject				2025/2026	
Education level	first-cycle studies	Subject group					
Mode of study	Part-time studies	Mode of delivery				at the university	
Year of study	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				8.0	
Learning profile	general academic 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						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	36.0	0.0	9.0	18.0	0.0	63
	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	63	0.0		0.0		63
Subject objectives	Familiarise the student with the fundamentals of Ship Hydromechanics. Use the laws of Ship Hydromechanics and apply them in practice.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	is able to identify, formulate and prepare documentation for a simple design or technological task including a description of the results of the task in Polish or foreign language and present the results using computer programs or other supporting tools			[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
	[K6_U14] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	is able to analyse the performance of marine equipment and compare the design solutions using usage, safety, environmental, economic and legal criteria			[SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K6_W08] has a knowledge of the analysis and design of selected technical systems, machines and technical equipment, selection of construction materials, manufacturing and operation, including their life cycle	has knowledge covering the fundamentals of analysis and design of selected marine technical systems, machinery and equipment.			[SW1] Assessment of factual knowledge		
	[K6_W11] has knowledge of analysis, design, technology and manufacturing of selected technical systems, machinery and equipment, metrology and quality control, knows and understands methods of measurement and calculation of basic quantities describing the operation of technical systems, knows basic calculation methods used to analyse experimental results	has basic knowledge of analysis, design, technology and manufacturing of selected technical systems, machinery and equipment, metrology and quality control, knows and understands methods of measurement and calculation of basic quantities describing operation of technical systems, knows basic calculation methods used to analyse experimental results			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>Lecture:</p> <p>Basic ship model testing, laws of similitude  Full scale resistance prediction based on model tests.  Practical methods for ship resistance prediction.  Practical methods for determining hull and propeller interaction coefficients.  Ship propulsors. Selection methods for ship propellers.  Ship steering devices, types and selection methods.  Prediction of manoeuvrability and seakeeping characteristics of modern ships.  Introduction to CFD in ship hydromechanics.</p> <p>Laboratory:</p> <p>Carrying out on the towing tank: heeling test, resistance tests of the ship model, measurement of the hydrodynamic characteristics of the ship propeller, measurement of the hydrodynamic characteristics of the hydrofoil.</p> <p>Project:</p> <p>Determination of the resistance curve, selection of propulsion and steering devices for the chosen vessel.</p>														
Prerequisites and co-requisites	Ship Theory														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="454 837 794 869">Subject passing criteria</th> <th data-bbox="794 837 1141 869">Passing threshold</th> <th data-bbox="1141 837 1482 869">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 869 794 900">Project</td> <td data-bbox="794 869 1141 900">100.0%</td> <td data-bbox="1141 869 1482 900">30.0%</td> </tr> <tr> <td data-bbox="454 900 794 931">Laboratory</td> <td data-bbox="794 900 1141 931">100.0%</td> <td data-bbox="1141 900 1482 931">30.0%</td> </tr> <tr> <td data-bbox="454 931 794 963">Lecture</td> <td data-bbox="794 931 1141 963">50.0%</td> <td data-bbox="1141 931 1482 963">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Project	100.0%	30.0%	Laboratory	100.0%	30.0%	Lecture	50.0%	40.0%
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Project	100.0%	30.0%													
Laboratory	100.0%	30.0%													
Lecture	50.0%	40.0%													
Recommended reading	Basic literature	<p>Dudziak J. Teoria okrętu, Fundacja Promocji Przemysłu Okrętowego i Gospodarki Morskiej, Gdańsk 2008  Frąckowiak M. Statyka okrętu, skrypt PG, Gdańsk 1983  Wełnicki W. Mechanika ruchu okrętu, skrypt PG, Gdańsk 1989  Birk L. Fundamentals of Ship Hydrodynamics, John Wiley &amp; Sons Ltd 2019</p>													
	Supplementary literature	<p>Wilson P. A. Basic Naval Architecture: Ship Stability, Springer 2018  Rawson K.J. Tupper E.C. Basic Ship Theory, vol. 1 and 2, Butterworth-Heinemann Oxford 2001  Lee B.S. Hydrostatics and Stability of Marine Vehicles: Theory and Practice, Springer 2019  Molland A.F. The Maritime Engineering Reference Book - a Guide To Ship Design, Construction And Operation, Butterworth-Heinemann Oxford 2008</p>													
	eResources addresses	Adresy na platformie eNauczanie:													
Example issues/ example questions/ tasks being completed	<p>Flow modelling laws.  Froude's method of converting model drag to real ship drag.  Methods of representing the hydrodynamic characteristics of ship propellers.  Types of steering gear of modern ships.</p>														
Work placement	Not applicable														

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