GDAŃSK UNIVERSITY OF TECHNOLOGY

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	Lecture: 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. Laboratory: 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. Project: Determination of the resistance curve, selection of propulsion and steering devices for the chosen vessel.
Prerequisites and co-requisites	Ship Theory

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	100.0%	30.0%
Labolatory	100.0%	30.0%
Lecture	50.0%	40.0%

Recommended reading

Basic literature	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 & Sons Ltd 2019
Supplementary literature	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 andPractice, Springer 2019 Molland A.F. The Maritime Engineering Reference Book - a Guide ToShip Design, Construction And Operation, Butterworth-HeinemannOxford 2008
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	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.
Work placement	Not applicable

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