GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Contemporary problems in ship construction and technology, PG_00065628		
Field of study	Naval Architecture and Offshore Structures		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Specialty subject group Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Karol Niklas	
	Teachers	dr hab. inż. Karol Niklas dr inż. Jakub Kowalski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	30.0	0.0	75
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	75	12.0	38.0	125

Subject objectives	The purpose of the course is to learn about selected issues in the design and construction of modern ship structures and other offshore structures, such as offshore oil platforms, offshore wind turbines.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] applies acquired analytical, simulation, and experimental methods, as well as mathematical models for analysis and evaluation of shipborne and offshore systems and processes	The student is introduced to engineering issues related to the process of construction of marine transportation means.	[SU1] Assessment of task fulfilment
[K7_W04] demonstrates knowledge encompassing selected issues in the field of advanced knowledge, particularly in the scope of methods, techniques, tools, and algorithms specific to Naval Architecture and Ocean Engineering	The student is introduced to engineering issues related to the process of construction of marine transportation means.	[SW2] Assessment of knowledge contained in presentation
[K7_W01] explains and describes, based on general knowledge in the field of scientific disciplines forming the theoretical foundations of Naval Architecture and Ocean Engineering, the construction and principles of operation of marine systems, processes and their components, as well as methods and means of their design and operation	The student learns the selected topics of shipbuilding technology and other marine structures.	[SW3] Assessment of knowledge contained in written work and projects
[K7_U04] creatively designs or modifies, either entirely or in part, a shipborne or offshore system or process according to a given specification, considering both technical and non-technical aspects, estimating costs and adopting design techniques representative for the field	The student learns the selected engineerind topics of shipbuilding and offshore engineering.	[SU4] Assessment of ability to use methods and tools
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study	The student learns the selected engineerind topics of shipbuilding and offshore engineering.	[SU4] Assessment of ability to use methods and tools
[K7_U02] formulates and tests hypotheses concerning problems related to shipborne and offshore systems/processes, as well as simple research problems	The student is introduced to engineering issues related to the process of construction of marine transportation means.	[SU2] Assessment of ability to analyse information

Subject contents

General characteristics of the technological process of shipbuilding and basic methods of assembly of ship hulls. Diagram of the manufacturing process of a ship. The student recognizes and describes the basic types of shipyards, methods of material processing, recognizes the main processes of ship construction and repair. Identifies, classifies and characterizes the basic steel and aluminum materials used in shipbuilding. Describes the technological equipment used in pre-treatment processes: describes the prefabrication and assembly processes during shipbuilding and the ship launching process. Becomes familiar with selected issues in ship maintenance. Discusses selected issues in the area of design and construction of ships and other marine structures, such as offshore platforms, wind turbines, other renewable energy marine devices.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lecture colloquium	50.0%	40.0%
laboratory	50.0%	20.0%
project	50.0%	40.0%

Recommended reading	Basic literature	Bruce G., Eyres D. - Ship Construction 7th Edition, Butterworth-Heinemann, ISBN-13: 978-0080972398, 2012 A.D.F. Quinn, *Design and Construction of Ports and Marine Structures*. N.F. Cornick, *Dock and Harbour Engineering*. R. Srinivasan, *Harbour Dock and Tunnel Engineering* Keith Smith, *Advances in Marine Structures* MARSTRUCT 2021, *Developments in the Analysis and Design of Marine Structures* DNV-RP-C102 STRUCTURAL DESIGN OF OFFSHORE SHIPS Doerffer Jerzy Technologia budowy kadłubów okrętowych, Wydawnictwo Morskie, 1971. Doerffer J.: Technologia remontów kadłubów okrętowych. WM Gdynia 1966. Przepisy i publikacje PRS https://prs.pl/publikacje/publikacje-do-pobrania/ DNV Rules for Ships https://www.dnv.com
	Supplementary literature	E.C. Tupper i K.J. Rawson, *Basic Ship Theory* Volker Bertram i H. Schneekluth, *Ship Design for Efficiency and Economy* W. Muckle, *Naval Architecture for Marine Engineers* Adrian Biran i Ruben Lopez Pulido, *Ship Hydrostatics and Stability* Carlos Guedes Soares i P.K. Das, *Analysis and Design of Marine Structures*
	eResources addresses	
Example issues/ example questions/ tasks being completed	Advanced Materials in Shipbuilding Automation and Digitalization in Ship Design Environmental Sustainability in Ship Construction Structural Integrity and Fatigue Analysis Shipbuilding Industry Supply Chain Challenges Safety Regulations and Compliance Innovations in Hull Design	
Work placement	Not applicable	

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