GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Contemporary Problems in Ship Construcyion and Technology, PG_00070359		
Field of study	Naval Architecture and Offshore Structures		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
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

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	30.0	0.0	60

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2535

Moodle ID: 8596 Contemporary Problems in Ship Construction and Technology https://enauczanie.pg.edu.pl/2025/course/view.php?id=8596

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	60	5.0	10.0	75

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 units, such as offshore oil platforms, offshore wind turbines.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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_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

Subject contents	Course content – lecture 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. Course content – laboratory The laboratory is focused on measuring the mechanical properties (including cyclic properties) of structural materials and/or welded joints using modern testing methods. It addresses issues related to measuring strain in structural components. If ongoing research projects are related to the topics covered in class, students participate in these research projects as part of the course. Course content – project Conceptual, structural, and manufacturing design for marine structures (ships, offshore structures). Work focused on introducing product innovations based on selected examples. Application of modern methods and computer tools in design and virtual testing. Work in design teams. Reporting on design work. Presentation of results to the group.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory	50.0%	25.0%
lecture colloquium	50.0%	25.0%
project	50.0%	50.0%

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	1. Advanced Materials in Shipbuilding 2. Automation and Digitalization in Ship Design 3. Environmental Sustainability in Ship Construction 4. Structural Integrity and Fatigue Analysis 5. Shipbuilding Industry Supply Chain Challenges 6. Safety Regulations and Compliance 7. Innovations in Hull Design	
Practical activites within the subject	Not applicable	

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