GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00062019						
Field of study	Mechanical and Naval Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
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	6		ECTS credits	8.0			
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 inż. Ryszard Pyszko					
	Teachers						

Lesson types

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

The aim of the course is to familiarize students with the technological aspects of constructing large-scale offshore structures. It also aims to familiarize students with the problems of transporting, installing, and operating these structures, taking into account environmental, logistical, and legal conditions during the implementation of offshore and onshore investments.

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	The student is able to develop a project task related to the preparation and implementation of an offshore investment and present the results, taking into account environmental, legal, and economic aspects.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
[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	As part of a project task, the student is able to select construction, manufacturing, and operating materials throughout the life cycle of an offshore facility.	[SW2] Assessment of knowledge contained in presentation [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	The student is able to apply knowledge of selected technical systems, machines, and devices to carry out assigned design tasks. The student is familiar with the basic calculation methods used to analyze experimental results.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K6_U14] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	The student is able to formulate criteria and conduct an analysis based on them, develop preliminary design solutions using safety, environmental, economic, and legal criteria.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents

Course content – lecture

1. Introduction, classification of structures
2. Environmental conditions and structural loads, types of offshore structures
3. Structural materials, prefabrication and assembly, marine transport of structures
4. Offshore installation, foundations and foundations
5. Pipelines and subsea installations, offshore wind farms.
6. Operation and maintenance, safety and work organization.
7. Environmental protection and regulations, case studies, development trends

Course content – laboratory

The laboratory sessions build upon the topics covered in the lectures. During these sessions, students perform experiments on simplified models and sample flat sections.

1. Longitudinal planing determination of the coefficient of friction
2. Geodetic measurements of the spatial sections position (positioning relative to PP and PS)
3. Leveling of a flat section - (drawing, location, evaluation of shape and dimensions)
4. Preparation of a measurement sheet - for the specified section

Course content – project

The project concerns the selection of materials for the main structural elements of the hull in accordance with PRS regulations, based on simplified assumptions. The project applies criteria for minimum allowable material thicknesses and maximum thicknesses for NEGATIVE operating temperatures of the hull structure. As part of the project, a material take-off for the hull structure is being prepared.

Prerequisites and co-requisites

Basic knowledge of materials science, welding, machine construction, and surveying.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture	66.0%	40.0%
Project	100.0%	30.0%
Lab	100.0%	30.0%

Recommended reading

Basic literature	Current classification society regulations regarding hull design and construction Doerffer J.: Ship Hull Construction Technology, Wydawnictwo Morskie, Gdynia 1963. Doerffer J.: Shipyard Production Organization, Wydawnictwo Morskie, Gdynia 1971 Doerffer J.: Ship Hull Repair Technology, Wydawnictwo Morskie, Doerffer J.: Ship Outfitting Technology, Wydawnictwo Morskie, Gdynia 1975 Szarejko J.: Shipwrights Handbook, Wydawnictwo Morskie, Gdańsk 1977
Supplementary literature	Websites and magazines
eResources addresses	

Example issues/ example questions/ tasks being completed

List the types of steel used in the shipbuilding and maritime industries.
Describe the principles of ship hull assembly and wind turbine tower construction.
Explain what sandwich structures are in the shipbuilding industry.

Practical activites within the subject

Not applicable