GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Marine Special Systems, PG_00060569		
Field of study	Naval Architecture and Offshore Structures		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2027/2028
Education level	first-cycle studies	Subject group	Optional 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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	assessment
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 inż. Jacek Nakielski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	15.0	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	8.0	67.0	150

Subject objectives

The aim of the course is to familiarize students with the construction, operation, and design of contemporary, especially unconventional, devices used in shipbuilding and the offshore industry, as well as in port handling.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems	Rozróżnia rodzaje stosowanych obecnie okrętowych systemów specjalnych wraz z ich funkcjami, konstrukcją oraz sposobem działania. Potrafi określić ich przydatność w różnego rodzaju systemach okrętowych, portowych i obiektach offshore zarówno do przeładunków jak i poszukiwania, badania i eksploatacji podmorskich surowców mineralnych.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[K6_K03] is aware of the impact of non-technical aspects on the engineer's work and the impact of engineering activities on the natural environment	They will be able to determine the nature of the working loads of the designed device and calculate stresses in important structural elements and joints using modern computer software.	[SK5] Assessment of ability to solve problems that arise in practice
[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems	Analizuje wieloaspektowo warianty możliwych rozwiązań konstrukcyjnych, dokonuje odpowiedniego wyboru. Wykonuje dokumentację techniczną oraz rysunkową dla wybranego okrętowego systemu specjalnego.	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>Lecture:

During the lecture, students will become familiar with the construction and principles of operation of maritime special systems including:

1. Handling equipment:

• Containers, palletized cargo, large objects (e.g., platforms, wind turbine components, etc.);
• Dry bulk goods (coal, metal ores, timber, grain, foodstuffs, fertilizers, cement);
• Liquid cargoes (crude oil, petroleum processing products, chemicals, liquefied gas cargoes).

2. Waterway dredging equipment (bucket dredgers, suction dredgers, suction-cutter dredgers, etc.), as well as equipment for extracting resources lying on the seabed (gravel, polymetallic nodules, etc.).

3. Specialized equipment:

• Used for laying submarine cables and pipelines;
• Found on offshore platforms and units.

Exercises:

During exercises, students analyze the operational states of example special equipment, determine the values and locations of maximum loads, and then calculate the stresses occurring there.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>Exercises</td><td>51.0%</td><td>30.0%</td></tr>
<tr><td>Lecture</td><td>51.0%</td><td>40.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>-</td></tr>
<tr><td>Supplementary literature</td><td>-</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
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</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Explanation of the principle of operation using coupled booms?

What are the basic loading systems for tankers?

Describe a selected method used for dredging waterways.

What is the function of a tensioner on a unit for laying submarine pipelines?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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