GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00062016						
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	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						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Beata Zima				
	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	
	Student analyses internal forces in different types of the ship structures: frames, discs, plates and shells. Student defines state of stresses in these elements. Student estimates stability of the structure elements. Student describes types of the vibration of the ship structures.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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	Students is able to describe how mechanic rules influence classification regulations.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
[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	Student knows how to solve technical problems using mechanic laws.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_U14] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	Student can perform strength analyses of structural elements and devices in maritime or yacht systems.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
[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	Student can identify mechanical issues allowing assessment of the behavior of maritime systems and devices.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge

Subject contents

Classification of the structure elements. Statics of frames. Theory of discs, plates and shells. Stability - buckling modes and critical stresses. Finite Element Method - statics, stability and dynamics. Free and enforced vibration of ships and its elements.

Prerequisites and co-requisites

Knowledge of the mechanics basis. Mathematics - differential and integral calculus.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
tests	25.0%	40.0%
Lecture test	25.0%	40.0%
reports	10.0%	20.0%

Recommended reading

Basic literature	Timoshenko, Woinowsky, Theory of plates and shells, 1961, Timoshenko, Gere, Theory of elastic stability, 1961, Dyląg, Jakubowicz, Strength of Materials, WNT, 1983
Supplementary literature	Zienkiewicz, Taylor, Finite Element Method Elsevier, 2005.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Write the boundary conditions for simply supported plates.

What is the difference in terms of the internal forces state between plates and shells?

Work placement

Not applicable

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