

GDAŃSK UNIVERSITY

Subject card

Subject name and code	THEORY OF HYDRO-ENGINEERING STRUCTURES, PG_00042267								
Field of study	Civil Engineering								
Date of commencement of studies	February 2024		Academic year of realisation of subject			2024/2025			
Education level	second-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	1		Language of instruction			Polish			
Semester of study	2		ECTS credits			3.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department of Geoter Engineering	chnics, Geolog	s, Geology and Marine Civil Engineering -> Faculty of Civil and Environmental						
Name and surname	Subject supervisor		dr hab. inż. W	Valdemar Magda					
of lecturer (lecturers)	Teachers								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	tory Project		Seminar	SUM	
of instruction	hours	30.0	15.0	0.0			0.0	45	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	45		3.0		27.0		75	
Subject objectives	Theoretical backgrounds of static and dynamic analyses of marine civil engineering structures.								
Learning outcomes	Course outcome Subject outcome Method of verification								
	[K7_U16] is able to estimate the technical condition of engineering object; can interpret the results of constructions and materials examination;		A student is able to evaluate the technical condition of marine civil engineering structure.			[SU2] Assessment of ability to analyse information			
	[K7_W11] has deep knowlege of marine and inland hydotechnical constructions; has knowledge about hydraulical and hydrological constrains in design and exploitation of buildings		A student has an extended knowledge on marine civil engineering structures (coastal and offshore) and types of loadings acting on structures.			[SW1] Assessment of factual knowledge			
	[K7_U10] can analyse complicated environmental loads acting on a construction; can apply proper processes to design marine and hydroengineering constructions taking into consideration hydrological and hydraulical impact		A student is able to analyze complex patterns of environmental loadings acting on marine civil engineering structures, among others: steel fixed offshore platforms, submarine pipelines, mooring-fendering dolphins.			[SU1] Assessment of task fulfilment			
[K7_U01] can evaluate and list any loads acting on constructions		te and list constructions	A student is able to distinguish and complete hydrostatic and hydrodynamic loads acting on marine civil engineering structures, among others: steel fixed offshore platforms, submarine pipelines, mooring- fendering dolphins.			[SU1] Assessment of task fulfilment			
Subject contents	A general characteristic of fixed offshore structures (steel and concrete platforms). Environmental loadings (wind, waves and tidal). Static analysis of offshore structures using matrix formulation and the Direct Stiffness Method. Stiffness matrix of the structure, boundary conditions, reduced equations. Solution of the matrix equation. Stress analysis in elements of steel offshore structures. Analyses of dynamic behaviour of simple vibrating structures due to cyclic wave-induced loadings. Single degree of freedom systems, basic equations, amplitude and phase lag of vibrations. Multi-degree of freedom systems. A water-hammer effect in submarine pipelines.								

Prerequisites					
and co-requisites					
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade		
	written test	60.0%	70.0%		
	student's activity	100.0%	30.0%		
Recommended reading	Basic literature	 Branicki Cz. i in.: Mechanika budowli. Ujęcie komputerowe. Arkady, Warszawa 1991. Magda W.: Rurociągi podmorskie. Zasady projektowania. Wydawnictwa Naukowo-Techniczne, Warszawa 2004. Mazurkiewicz B.: Stałe pełnomorskie platformy żelbetowe. Wydawnictwo Morskie, Gdańsk 1985. Mazurkiewicz B.: Stałe pełnomorskie platformy stalowe. Wydawnictwo Morskie, Gdańsk 1988. Karlic S.: Zarys górnictwa morskiego. Wydawnictwo Śląsk, Katowice 1983. Dawson T.H.: Offshore Structural Engineering. Prentice-Hall, Englewood Cliffs, New Jersey 1983. Obowiązujące normy i akty prawne dotyczące budowli 			
	Supplementary literature	 Gerwick B.C.: Construction of C Sons, New York 1986. Reddy D.V., Arockiasamy M.: C Publishing Company, Malabar, 	i of Offshore Structures. John Wiley & M.: Offshore Structures. Krieger Ibar, Florida 1991.		
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed					
Work placement	Not applicable				

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