GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Contemporary topics in ship theory, PG_00065625						
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	Polish			
Semester of study	2		ECTS credits	5.0			
Learning profile	general academic profile		Assessment form	exam			
Conducting unit	Zakład Projektowania Okrętu - Brak (istniała Wcześniej) -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Przemysław Krata				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	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		12.0	38.0		125
Subject objectives	The aim is to present a modern approach to ship theory accounting for the dynamics of ship motion and second-generation intact stability criteria.						

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	Students is able to discuss some selected components of the Second Generation Intact Stability Criteria (SGISC)	[SW1] Assessment of factual knowledge
[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 applies proper methods to evaluate the vulnerability of a ship to selected stability failure modes	[SU4] Assessment of ability to use methods and tools
[K7_U02] formulates and tests hypotheses concerning problems related to shipborne and offshore systems/processes, as well as simple research problems	The student evaluates the influence of selected factors on evaluation of a ship vulnerability to stability failure modes	[SU3] Assessment of ability to use knowledge gained from the subject
[K7_W01] explains and describes, based on general knowledge in the field of scientific disciplines forming the theoretical foundations of Naval Architecture and Ocean Engineering, the construction and principles of operation of marine systems, processes and their components, as well as methods and means of their design and operation	The student explains the principles of considering SGISC in ship design	[SW1] Assessment of factual knowledge
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study	The student assesses SGISC for the design of safe ships	[SU2] Assessment of ability to analyse information
[K7_U04] creatively designs or modifies, either entirely or in part, a shipborne or offshore system or process according to a given specification, considering both technical and non-technical aspects, estimating costs and adopting design techniques representative for the field	The student applies selected components of SGISC in ship design	[SU1] Assessment of task fulfilment

Subject contents

Second Generation Intact Stability Criteria.

Selected issues of ship motion dynamics.

Prerequisites and co-requisites

Good knowledge of the fundamentals of hydrostatics and ship stability. Understanding of the fundamentals of mechanics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
	50.0%	30.0%
	50.0%	35.0%
	50.0%	35.0%

Recommended reading

Basic literature	SOLAS Convention IMO MSC.1/Circ.1627 - Interim Guidelines on the Second Generation Intact Stability Criteria IMO MSC.1/Circ.1652 - Explanatory Notes To The Interim Guidelines On The Second Generation Intact Stability Criteria

	Supplementary literature	Zbigniew Szozda, Przemyslaw Krata, Towards evaluation of the second generation intact stability criteria - Examination of a fishing vessel vulnerability to surf-riding, based on historical capsizing, Ocean Engineering, Volume 248, 2022, https://doi.org/10.1016/j.oceaneng.2022.110796. Ermina Begovic, Carlo Bertorello, Barbara Rinauro, Gennaro Rosano, Simplified operational guidance for second generation intact stability criteria, Ocean Engineering, Volume 270, 2023, https://doi.org/10.1016/j.oceaneng.2022.113583.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Describe the dynamic phenomena covered by the Second Generation Intact Stability Criteria and the conditions under which they occur.	
Work placement	Not applicable	

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