



Subject card

Subject name and code	Advanced Topics in Ship Theory, PG_00062681						
Field of study	Naval Architecture and Offshore Structures						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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			English		
Semester of study	2	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Projektowania Okrętu -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
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		10.0		40.0	125
Subject objectives	The aim is to present a modern approach to ship theory, taking into account the dynamics of ship motion and second-generation intact stability criteria.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W02] Explains the essence and relationships of key components describing systems and processes in ocean engineering, utilizing current knowledge from major scientific fields related to the field of study	The student convincingly describes the dynamic phenomena to which the ship is subjected at sea	[SW1] Assessment of factual knowledge
	[K7_W06] Capable of finding and utilizing credible sources of information crucial for analyzing issues within the field of study	The student correctly selects modern source materials in the area of ship theory	[SW3] Assessment of knowledge contained in written work and projects
	[K7_K01] Understands the need for lifelong learning, critically evaluate acquired knowledge, and comprehend the significance of knowledge in addressing cognitive and practical problems	The student discusses contemporary developments in the area of ship theory	[SK1] Assessment of group work skills
	[K7_W03] Demonstrates advanced skills in applying analytical methods and problem-solving techniques related to ocean engineering, using appropriate tools	The student demonstrates practical skills of implementing knowledge in ship theory	[SW3] Assessment of knowledge contained in written work and projects
	[K7_U02] Presents convincing and logically justified arguments regarding outcomes through critical analysis of information in diverse technical contexts and an approach to their interpretation	The student analyzes and interprets the results of calculations related to modern methods of ship stability assessment.	[SU2] Assessment of ability to analyse information
[K7_U01] Develops innovative strategies to solve complex and dynamic problems by synthesizing information from various sources and utilizing analytical, simulation, and experimental methods, considering environmental variability	The student uses synthetic knowledge to evaluate dynamic phenomena affecting the ship	[SU3] Assessment of ability to use knowledge gained from the subject	
Subject contents	<p>Second Generation Intact Stability Criteria.</p> <p>Selected issues of ship motion dynamics.</p> <p>Damage stability.</p>		
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	<p>SOLAS Convention</p> <p>IMO MSC.1/Circular.1627 - Interim Guidelines on the Second Generation Intact Stability Criteria</p>	

	Supplementary literature	<p>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, <a href="https://doi.org/10.1016/j.oceaneng.2022.110796">https://doi.org/10.1016/j.oceaneng.2022.110796</a>.</p> <p>Ermina Begovic, Carlo Bertorello, Barbara Rinauro, Gennaro Rosano, Simplified operational guidance for second generation intact stability criteria, Ocean Engineering, Volume 270, 2023, <a href="https://doi.org/10.1016/j.oceaneng.2022.113583">https://doi.org/10.1016/j.oceaneng.2022.113583</a>.</p> <p>Evangelos Boulougouris, Jakub Cichowicz, Andrzej Jasionowski, Dimitris Konovessis, Improvement of ship stability and safety in damaged condition through operational measures: Challenges and opportunities, Ocean Engineering, Volume 122, 2016, Pages 311-316, <a href="https://doi.org/10.1016/j.oceaneng.2016.06.010">https://doi.org/10.1016/j.oceaneng.2016.06.010</a>.</p>
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	<p>Describe the dynamic phenomena covered by the Second Generation Intact Stability Criteria and the conditions under which they occur.</p> <p>Discuss the concepts of emergency stability assessment of a ship.</p>	
Work placement	Not applicable	