GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

<table>
<tr><td>Subject name and code</td><td colspan="6">Advanced Methods of Hull Design, PG_00062692</td></tr>
<tr><td>Field of study</td><td colspan="6">Naval Architecture and Offshore Structures</td></tr>
<tr><td>Date of commencement of studies</td><td colspan="2">February 2024</td><td colspan="2">Academic year of realisation of subject</td><td colspan="2">2024/2025</td></tr>
<tr><td>Education level</td><td colspan="2">second-cycle studies</td><td colspan="2">Subject group</td><td colspan="2">Specialty subject group
Subject group related to scientific research in the field of study</td></tr>
<tr><td>Mode of study</td><td colspan="2">Part-time studies</td><td colspan="2">Mode of delivery</td><td colspan="2">at the university</td></tr>
<tr><td>Year of study</td><td colspan="2">1</td><td colspan="2">Language of instruction</td><td colspan="2">Polish</td></tr>
<tr><td>Semester of study</td><td colspan="2">2</td><td colspan="2">ECTS credits</td><td colspan="2">5.0</td></tr>
<tr><td>Learning profile</td><td colspan="2">general academic profile</td><td colspan="2">Assessment form</td><td colspan="2">assessment</td></tr>
<tr><td>Conducting unit</td><td colspan="6">Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology</td></tr>
<tr><td rowspan="2">Name and surname of lecturer (lecturers)</td><td colspan="2">Subject supervisor</td><td colspan="4">dr inż. Tomasz Hinz</td></tr>
<tr><td colspan="2">Teachers</td><td colspan="4"></td></tr>
<tr><td rowspan="3">Lesson types and methods of instruction</td><td>Lesson type</td><td>Lecture</td><td>Tutorial</td><td>Laboratory</td><td>Project</td><td>Seminar</td><td>SUM</td></tr>
<tr><td>Number of study hours</td><td>18.0</td><td>0.0</td><td>0.0</td><td>27.0</td><td>0.0</td><td>45</td></tr>
<tr><td colspan="7">E-learning hours included: 0.0</td></tr>
<tr><td rowspan="2">Learning activity and number of study hours</td><td>Learning activity</td><td colspan="2">Participation in didactic classes included in study plan</td><td>Participation in consultation hours</td><td>Self-study</td><td>SUM</td></tr>
<tr><td>Number of study hours</td><td colspan="2">45</td><td>8.0</td><td>72.0</td><td>125</td></tr>
<tr><td>Subject objectives</td><td colspan="6">Demonstration of modern ship design methods</td></tr>
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Learning outcomes	(see table below)

Course outcome	Subject outcome	Method of verification
[K7_W06] Capable of finding and utilizing credible sources of information crucial for analyzing issues within the field of study	Able to prepare a project or a part of it for a selected vessel	[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	Able to prepare a project or a part of it for a selected vessel	[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
[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	Able to prepare a project or a part of it for a selected vessel	[SU1] Assessment of task fulfilment
[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	Able to prepare a project or a part of it for a selected vessel	[SW3] Assessment of knowledge contained in written work and projects
[K7_W03] Demonstrates advanced skills in applying analytical methods and problem-solving techniques related to ocean engineering, using appropriate tools	Able to prepare a project or a part of it for a selected vessel	[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 demonstrates an understanding of the idea of development of science and technology.	[SK4] Assessment of communication skills, including language correctness

Subject contents	• Top-down approach, including similar ships, regressions and previous projects • Bottom-up approach, including Design Building Blocks, Packing approach and system-based approaches • "What-if" scenarios (epoch-era matrix)
Prerequisites and co-requisites	
Assessment methods and criteria	(see table below)

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	50.0%	100.0%

Recommended reading	Basic literature	Papanikolaou, Apostolos, ed. Risk-Based Ship Design. Berlin, Heidelberg: Springer Berlin Heidelberg, 2009. https://doi.org/10.1007/978-3-540-89042-3.Rehn, Carl Fredrik Ship Design under Uncertainty. PhD Thesis, Norwegian University of Science and Technology, 2018.Oers, Bart van, Douwe Stapersma, and Hans Hopman. A 3D Packing Approach for the Early Stage Configuration Design of Ships. In 9th International Conference on Computer and IT Applications in the Maritime Industries. Gubbio, Italy, 2010.Papanikolaou, Apostolos, ed. A Holistic Approach to Ship Design: Volume 1: Optimisation of Ship Design and Operation for Life Cycle. Cham: Springer International Publishing, 2019. https://doi.org/10.1007/978-3-030-02810-7.,Papanikolaou, Apostolos, ed. A Holistic Approach to Ship Design: Volume 2: Application Case Studies. Springer International Publishing, 2021. https://doi.org/10.1007/978-3-030-71091-0.Gaspar, Henrique M. Handling Aspects of Complexity in Conceptual Ship Design. PhD Thesis, Norwegian University of Science and Technology, 2013.Keane, Andre Christian. Using Epoch Era Analysis in the Design of the Next Generation Offshore Subsea Construction Vessels. MSc Thesis, Norwegian University of Science and Technology, 2014.
	Supplementary literature	Papanikolaou, Apostolos. Ship Design Methodologies of Preliminary Design. Dordrecht: Springer Netherlands, 2014. https://doi.org/10.1007/978-94-017-8751-2.Roh, Myung-Il, and Kyu-Yeul Lee. Computational Ship Design. Singapore: Springer Singapore, 2018. https://doi.org/10.1007/978-981-10-4885-2.Andrews, David. 100 Things (or so) a Ship Designer Needs to Know. In Day 2 Mon, June 27, 2022, D021S001R001. Vancouver, Canada: SNAME, 2022. https://doi.org/10.5957/IMDC-2022-230.Andrews, D.J. A Comprehensive Methodology for the Design of Ships (and Other Complex Systems). Proceedings of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences 454, no. 1968 (January 8, 1998): 187211. https://doi.org/10.1098/rspa.1998.0154.Kondratenko, Aleksander, and Pentti Kujala. A Framework for Multi-Objective Optimization of Arctic Offshore Support Vessels, A Risk-Based Approach to Optimal Margins in Ship Design. PhD Thesis, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, 2002.Mermiris, Georgios Apostolou. A RISK-BASED DESIGN APPROACH TO SHIP SHIP COLLISION. PhD Thesis, Universities of Glasgow and Strathclyde, 2010.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	