



Subject card

Subject name and code	Designing and Structure of Yachts, PG_00045107						
Field of study	Ocean Engineering, Ocean Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2022/2023		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Theory and Ship Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Artur Karczewski				
	Teachers		dr inż. Artur Karczewski				
			dr hab. inż. Przemysław Krata				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	45.0	0.0	60
	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	60		7.0		33.0	100
Subject objectives	The aim of the course is to learn about the design process of sailing and motor yachts sailing in a different range of Froud numbers using professional computer programs. The student carries out an offer design of the selected yacht type as part of design classes.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K03] understands non-technical aspects and effects of operation as an engineer, its influence on the environment and is aware of the responsibilities for the decisions taken		The student analyzes the impact on the economic aspects of his decisions depending on the type of yacht, production volume and materials used		[SK5] Assessment of ability to solve problems that arise in practice		
	[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems		As part of the course, the student has introductory lectures presenting individual issues of the design process and a computer laboratory with access to design programs for the implementation of a project task.		[SW1] Assessment of factual knowledge		
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems		The student learns the processes of designing vessels based on design algorithms presented with a design spiral selected for a given type of vessel. The student carries out a project in the field of the first iteration of the design spiral with the selection of some modules, including the yacht structure.		[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems		The student acquires knowledge in the implementation of design processes depending on the selected materials of the hull of the unit type and its impact on the implementation of individual design stages and their correction.		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		

Subject contents	As part of the course, students have introductory lectures on the design process and a computer laboratory where they carry out an individually selected yacht design. The student chooses the type of unit guided by the model design and implements the elements of the design process one by one within the design spiral appropriate for a given unit.The project includes the first iteration in the field of: determining the main dimensions, hull shape - 3D model, thrust optimization, hydrostatic calculations, hull structure, stability, selection of the propulsion engine and propeller. The final result is a tender design including the following documents: General PLAN, THEORETICAL LINES, COATING DEVELOPMENT, LONGITUDINAL AND TRANSVERSE LAYOUT, TECHNICAL OPS		
Prerequisites and co-requisites	Knowledge of: descriptive geometry, ship drawing, strength of materials, hydrodynamics, ship technology, basic computer programs .		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project presentation	80.0%	100.0%
Recommended reading	Basic literature] Principles of yacht design, Larsson L., Eliasson R. E .: Adlard Coles Nautical 2000[2] Sailing theory - Hull Hydrodynamics, Marchaj C., Alma-Press 2013[3] Sailing theory - Hull hydrodynamics, Marchaj C., Alma-Press 2013[4] Theory of the ship -, Dudziak J. Marine Publishing House Gdańsk 1988	
	Supplementary literature	[1] Rules for the Classification and Construction of Motor Boats - PRS [2] Rules for the classification and construction of sea-going yachts - PRS	
	eResources addresses	Podstawowe https://www.prs.pl/wydawnictwa/przepisy-klasyfikacyjne - Polish Register of Shipping, WOiO PG library Adresy na platformie eNauczanie: Projektowanie i konstrukcja jachtów - Moodle ID: 29511 https://enauczenie.pg.edu.pl/moodle/course/view.php?id=29511	
Example issues/ example questions/ tasks being completed	The main design parameters of a sailing and motor yacht.Design parameters appearing in the resistance regression equations of sailing yachts.Design parameters appearing in the resistance regression equations of motor yachts depending on the design Froud number.Principles of designing the yacht's hull structure - longitudinal, transverse and mixed.		
Work placement	Not applicable		