GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Wind Propulsion Design, PG_00056253
Field of study	Design and Construction of Yachts

Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	English
Semester of study	4	ECTS credits	3.0
Learning profile	practical profile	Assessment form	assessment

Conducting unit	Department Of Theory And Ship Design -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Artur Karczewski
	Teachers	dr inż. Artur Karczewski
		dr inż. Ewelina Ciba
		mgr inż. Hanna Pruszko

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	0.0	45
	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	45	5.0	25.0	75

Subject objectives	Mastering the methods of designing sails propulsors.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U05	The student can solve engineering tasks in the field of designing a sail propulsion for yachts	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
	K6_W05	The student has knowledge of the design of yachts and issues related to their operation	[SW3] Assessment of knowledge contained in written work and projects
	K6_U03	The student can use the computer aided tools the design of a sail propulsion	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	Lectute: The environment of the sails. Air and wind in nature. Type of sails arrangement. Creation of a forces on a sail propulsions. Theory of lifting plate - mathematical models (boundary vortex, free vortex, induced velocity, distribution of circulation and pleasure on sail plate). Influence of sails plane outline and slender on aero-dynamics characteristics. Measure of merit of aerodynamics efficiency of sail propulsions. Relation between lifting force and trust. Theory of thin sections. Cooperation of sails in stack and palisade configurations. Geometry of sail plate. VPP (Velocity and Stability Prediction Programs),VMG (velocity made good). Temporary technology and fabric in sails manufacture. Design: - sails plan of sailing yacht - sails balance - VPP ans SPP calculations - drawing - Rig and Sails Plane.
Prerequisites and co-requisites	The knowledge of mechanics, hydromechanics, ship theory, ship design.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	100.0%	25.0%
	test	51.0%	75.0%

Recommended reading	Basic literature	1. Milewski Z.; Sailing Yacht Design , Gdynia, Milewski J. 1999 (in polish) 2. Larsson L.,Eliasson R.; Principles of Yacht Design, Adlard Cole Nautical 1994 3. Claughton, Wellicome, Shenoi; Sailing Yacht Design Theory, Longman ,Dorchester 1998 4. Machaj Cz. ; Sailing theory and Practice, London; Adlard Coles Nautical 1979
	Supplementary literature	1. Durand W.F.; Aerodynamics Theory , vol.IV Ney York 1963 2. Abbott I.S., Doenhoff A.E.; Theory of wing sections, Dover Publication, NY 3. Hoerner S.F.; Fluid Dynamic Lift, Hoerner S.F- 1975 4. Hoerner S.F.; Fluid Dynamic Drag, Hoerner S.F- 1975
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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