



Subject card

Subject name and code	Wind Farm Design, PG_00062647						
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 lecture in English exercises and project in Polish	
Semester of study	2	ECTS credits				4.0	
Learning profile	general academic profile	Assessment form				exam	
Conducting unit	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. Wojciech Litwin				
	Teachers		Filip Wasilczuk				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	30.0	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		10.0		30.0	100
Subject objectives	Aerodynamic aspects of off-shore wind turbines, effects related to the application of wind farms						
Learning outcomes	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	The student is able to find and use reliable sources of information important for analyzing problems in the area of wind energy.			[SW3] Assessment of knowledge contained in written work and projects		
	[K7_W05] Considers in advanced analyses the technical, environmental, economic, legal, and ethical aspects related to maritime activities, demonstrating an awareness of responsibility for decisions made and fostering the development of individual entrepreneurship	The student is able to take into account technical, environmental, economic, as well as legal and ethical aspects related to wind energy.			[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 presents justified arguments regarding the results of his own research on wind energy problems.			[SU5] Assessment of ability to present the results of task			
Subject contents	applied aerodynamics, types of flows, aerodynamic characteristics of profiles, formation of wind turbine rotor blades, wind turbines wakes, methods of wakes control, control of wake interaction between rotors.						
Prerequisites and co-requisites	basic fluid mechanics						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	1) assessment test		50.0%		50.0%		
	2) handing over the finished project		50.0%		50.0%		

Recommended reading	Basic literature	<p>Offshore Wind: Technologies, Ecological Risks &amp; Prospects, Chester Mendoza, ISBN-13 : 978-1634823647</p> <p>Wind Energy Handbook, Nick Jenkins, Tony L Burton, Ervin Bossanyi, David Sharpe, Michael Graham; ISBN-13 : 978-1119451099</p> <p>Wind Energy Engineering: A Handbook for Onshore and Offshore Wind Turbines, Trevor M. Letcher; ISBN-13 : 978-0128094518</p> <p>Offshore Wind Power; John Twidell and Gaetano Gaudiosi; ISBN: 9780906522639</p> <p>Offshore Wind Farms; María Dolores Esteban, José-Santos López-Gutiérrez, Vicente Negro Valdecantos; ISBN 978-3-03928-563-1;</p> <p><a href="https://doi.org/10.3390/books978-3-03928-563-1">https://doi.org/10.3390/books978-3-03928-563-1</a></p> <p>Floating Offshore Wind Farms; Laura Castro-Santos, Vicente Diaz-Casas; ISBN: 978-3-319-80250-3</p>
	Supplementary literature	<p><a href="https://drg.pomorskie.eu/wp-content/uploads/2021/07/WIZJA-DLA-BALTYKU.-WIZJA-DLA-POLSKI.-ROZWOJ-MORSKIEJ-ENERGETYKI-WIATROWEJ.pdf">https://drg.pomorskie.eu/wp-content/uploads/2021/07/WIZJA-DLA-BALTYKU.-WIZJA-DLA-POLSKI.-ROZWOJ-MORSKIEJ-ENERGETYKI-WIATROWEJ.pdf</a></p> <p><a href="https://pism.pl/publikacje/Rozwoj_morskiej_energetyki_wiatrowej_na_Morzu_Baltyckim">https://pism.pl/publikacje/Rozwoj_morskiej_energetyki_wiatrowej_na_Morzu_Baltyckim</a></p>
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	<p>nduction of wake behind off-shore wind turbine</p> <p>methods od wake direction control</p> <p>generation of blockage effect of a wind farm</p>	
Work placement	Not applicable	

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