GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Offshore Wind Farm Planning, PG_00066989		
Field of study	Smart Renewable Energy Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	English
Semester of study	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Paweł Flaszyński	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	30

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	30	4.0	16.0	50

Subject objectives

The overall focus is that students acquire some fundamental knowledge about the technology used in offshore wind energy and that they learn how an offshore wind farm is planned.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W05] understands the principles of sustainable development and safety in the context of energy systems, including the role of electrification, and can assess the environmental impact of renewable energy systems, particularly wind power installations	The student can choose a suitable wind turbine for a specific location and estimate an annnual energy production based on a wind atlas.	[SW3] Assessment of knowledge contained in written work and projects
[K7_W06] is acquainted with global, European, and national energy policies and regulations regarding renewable energy and has basic knowledge of project management in the context of energy engineering	The student can choose a suitable wind turbine for a specific location and estimate an annnual energy production based on a wind atlas.	[SW3] Assessment of knowledge contained in written work and projects
[K7_U04] possesses remote diagnostic skills and the ability to address technical issues in energy systems using remote diagnostic tools	The student is familiar with the key factors that must be taken into account when planning an offshore wind farm.	[SU4] Assessment of ability to use methods and tools
[K7_K05] complies with legal regulations and standards related to renewable energy, including wind power, ensuring that energy installations and projects operate in accordance with current legislation	The student is familiar with the key factors that must be taken into account when planning an offshore wind farm.	[SK5] Assessment of ability to solve problems that arise in practice

<table>
<tr><td>Subject contents</td><td>Course content – lecture
1. Wind resource assessment for planning purposes
2. Capacity factors of the wind farms
3. Offshore wind and Society
4. Environmental impact assessment
5. End of life for wind farms, decommissioning and circularity
6. Simulations of various wind farm layouts, wake interactions, wind farm wake and blockage effect. Optimization of the wind farm layout and control.
7. Analysis of the maps available in government databases for wind farm planning with the use of Geographic Information System (GIS)</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Fundamentals of Wind Energy Engineering, Fluid Dynamics and Aeroelasticity, Measurements and monitoring</td></tr>
<tr><td>Assessment methods and criteria</td><td><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Lecture</td><td>60.0%</td><td>50.0%</td></tr><tr><td>Laboratory</td><td>60.0%</td><td>50.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Wind Turbines: Theory and Practice, Colin Anderson, Cambridge University Press, 2020</td></tr>
<tr><td>Supplementary literature</td><td>Literature will be provided during the course</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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