GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Transport, Logistics and Offshore Processes, PG_00066990		
Field of study	Smart Renewable Energy Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
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	Division of Hydromechanics and Ship Design -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Dymarski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	10.0	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 aim of the course is to familiarize students with the methods of transport, installation and servicing of offshore wind turbines and other wind farm facilities. Additionally, the student will become familiar with the processes necessary to perform in order to install and service offshore wind farm facilities. The student will become familiar with the methods of estimating the quantities necessary to plan these operations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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 knows selected rules/ regulations regarding safety during transportation and installation operations of floating wind turbines	[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 has the skills to diagnose and solve technical problems related to the transport and installation of offshore energy system facilities.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [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 complies with regulations and standards relating to the offshore wind sector, ensuring compliance of designs and operation of energy installations with applicable regulations.	[SK5] Assessment of ability to solve problems that arise in practice
[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 understands the basic safety rules used during the transportation and installation of floating wind turbines	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td>1. Shipyard and port infrastructure. Docks and quays of the southern Baltic.
2. Methods of transport and installation of bottom fixed type support structures. Units for transport and installation of foundation support structures.
3. Process of installing the tower and turbine rotor. Wind turbine installation vessel.
4. Transport and installation of floating wind turbines
- methods of transporting (tow) floating wind turbines,
- approximate methods of determining resistance (and required power) during FWT transport
-- Spar
-- Semisubmersible
-- Barge
-- TLP
- stability of floating wind turbine during transport and installation process
- determining natural periods of towed structure. Simplified methods of determining RAO function.
- methods of installing turbine rotor. Cranes on quay, "Jack-up" cranes, (large) floating cranes.
- operations of anchoring floating platforms.
5. Operations related to servicing floating wind turbines. Vessels for servicing wind turbines.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>- Basic knowledge of the stability of floating objects
- Basic knowledge of the hydromechanics of floating objects methods for determining hydrodynamic resistance
- Basic knowledge of the dynamics of the marine environment</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>Laboratory exercises (reports)</td><td>70.0%</td><td>33.0%</td></tr>
<tr><td>Lecture (colloquium)</td><td>60.0%</td><td>67.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>1. KURT E. THOMSEN: A Comprehensive Guide to Successful Offshore Wind Farm Installation
2. Joao Cruz, Mairead Atcheson: Floating Offshore Wind Energy The Next Generation of Wind Energy
3. SUBRATA K. CHAKRABARTI HANDBOOK OF OFFSHORE ENGINEERING
4. AP Crowle and PR Thies: Floating offshore wind turbines port requirements for construction
5. R. C. Ramachandran, C. Desmond, F. Judge, J.J. Serraris, J. Murphy:Floating wind turbines: marine operations challenges and opportunities</td></tr>
<tr><td>Supplementary literature</td><td>1. O.M. Faltinsen: Sea Loads on Ship and Offshore Structures
2. Gunter Clauss, Eike Lehmann and Carsten Ostergaard: Offshore Structures. Volume I Conceptual Design and Hydromechanics</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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