



Subject card

Subject name and code	Marine and Offshore Structures, PG_00060564						
Field of study	Naval Architecture and Offshore Structures						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
Education level	first-cycle studies	Subject group				Optional 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	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				4.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Division of Automation and Marine Energy -> 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	dr hab. inż. Jerzy Kowalski					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0	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		6.0		34.0	100
Subject objectives	The aim of the course is to familiarize students with the methods of obtaining raw materials, including crude oil and natural gas from under the seabed as well as obtaining energy from renewable sources on the example of offshore wind farms.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems	knows the principles of machine design			[SW3] Assessment of knowledge contained in written work and projects		
	[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	formulates a simple engineering task and its specification in the field of design, production and operation of ocean technical facilities and systems			[SU1] Assessment of task fulfilment		
	[K6_K03] is aware of the impact of non-technical aspects on the engineer's work and the impact of engineering activities on the natural environment	knows the principles of ergonomics and safety			[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	<p>Course content – lecture The lecture material includes knowledge of:</p> <p>methods of searching for crude oil and natural gas under the seabed, installation and construction of individual elements of the oil field, basic offshore drilling methods, methods of laying submarine pipelines, the type of ocean engineering facilities for offshore works, including drilling and construction, machinery and equipment units for the construction and operation of the oil field (FSU / FSO, FPSU / FPSO, FPDSO, drilling and production platforms), offshore crude oil and natural gas reloading operations, offshore wind farm locations, installation and construction of wind farms, production of renewable energy, Polish and international regulations and institutions supervising the course of individual investment stages, starting from the conceptual design, ending with operation and distribution.</p> <p>The exercises and projects are aimed at making calculations and projects related to equipment and systems for oil and gas production and their installation (based on DNV, API, ISO regulations), including:</p> <p>fixed and detachable connections of elements the subsea structures, calculations, design and selection of pipelines for the transport of oil and gas, lowering of the structure from the deck of the ship/rig, on the seabed at a predetermined wave height. operations deposition components oil field on the seabed, calculation and selection the support structure for offshore wind farms.</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="453 754 794 784">Subject passing criteria</th> <th data-bbox="799 754 1141 784">Passing threshold</th> <th data-bbox="1145 754 1490 784">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 790 794 819">lecture - tests (2 or 3)</td> <td data-bbox="799 790 1141 819">60.0%</td> <td data-bbox="1145 790 1490 819">50.0%</td> </tr> <tr> <td data-bbox="453 826 794 898">exercises and design - calculations and design of offshore devices and systems</td> <td data-bbox="799 826 1141 898">60.0%</td> <td data-bbox="1145 826 1490 898">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	lecture - tests (2 or 3)	60.0%	50.0%	exercises and design - calculations and design of offshore devices and systems	60.0%	50.0%
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Recommended reading	<p>Basic literature</p>	<p>Saipem, "Offshore Pipelines".</p> <p>Bai Y., Bai Q.: Subsea Engineering Handbook. ELSEVIER Inc, New York, 2012.</p> <p>EEA, Europe's onshore and offshore wind energy potential, Technical report No 6/2009.</p> <p>Projekt UpWind Integrated Wind Turbine Design, Offshore Foundations and Support Structures.</p> <p>Polish Wind Energy Association, Assessment of the development opportunities and potential of wind energy in Poland until 2020.</p> <p>Ben C. Gerwick, Jr., Construction of marine and offshore structures, Taylor and Francis Group, San Francisco, 2007.</p> <p>Subrata K. Chakrabarti, Handbook of offshore engineering, Plainfield, Illinois, USA, 2005.</p>										
	<p>Supplementary literature</p>	<p>Specialist magazines: Offshore, World Oil, Ocean Industry.</p> <p>Websites: www.offshore-technology.com/contractors/lifting/dreggen/.</p> <p>Karlic S.: Zarys górnictwa morskiego. Wydawnictwo Śląsk, 1984.</p> <p>Wiewióra A., Wesolek Z., Puchalski J., Ropa naftowa w transporcie morskim, Publisher Trademar, 2007.</p>										
	<p>eResources addresses</p>											
Example issues/ example questions/ tasks being completed												

Practical activities within the subject	Not applicable
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