



Subject card

Subject name and code		Construction and Operation of Offshore Systems, PG_00045121						
Field of study		Ocean Engineering, Ocean Engineering						
Date of commencement of studies		October 2020	Academic year of realisation of subject			2022/2023		
Education level		first-cycle studies	Subject group					
Mode of study		Full-time studies	Mode of delivery			at the university		
Year of study		3	Language of instruction			Polish		
Semester of study		6	ECTS credits			4.0		
Learning profile		general academic profile	Assessment form			assessment		
Conducting unit		Faculty of Ocean Engineering and Ship Technology						
Name and surname of lecturer (lecturers)		Subject supervisor		dr hab. inż. Wojciech Litwin				
		Teachers		dr inż. Jacek Nakielski				
Lesson types and methods of instruction		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	10.0		30.0	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	The student is able to use in practice the knowledge acquired in the lecture by performing calculations, projects and solving problematic issues associated with the construction and operation of offshore facilities and systems.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
		[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems	The student knows the methods, tools, devices, units and objects of the ocean to obtain raw materials from the seabed. He knows what aspects should be taken into account when designing and operating oil pipelines. He knows what the individual offshore oil handling systems are characterized by. Has knowledge of the installation and construction of wind farms and the production of renewable energy.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [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	The student knows what aspects should be taken into account when designing and operating offshore systems. Is able to use the relevant regulations of the Classification Societies and tools during design, and can calculate and select optimal structural elements or devices of the selected offshore system.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		

Subject contents	<p>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="453 725 794 757">Subject passing criteria</th> <th data-bbox="799 725 1141 757">Passing threshold</th> <th data-bbox="1145 725 1492 757">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="453 763 794 837">exercises and design - calculations and design of offshore devices and systems</td> <td data-bbox="799 763 1141 837">60.0%</td> <td data-bbox="1145 763 1492 837">50.0%</td> </tr> <tr> <td data-bbox="453 844 794 875">lecture - tests (2 or 3)</td> <td data-bbox="799 844 1141 875">60.0%</td> <td data-bbox="1145 844 1492 875">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	exercises and design - calculations and design of offshore devices and systems	60.0%	50.0%	lecture - tests (2 or 3)	60.0%	50.0%
Subject passing criteria	Passing threshold	Percentage of the final grade										
exercises and design - calculations and design of offshore devices and systems	60.0%	50.0%										
lecture - tests (2 or 3)	60.0%	50.0%										
Recommended reading	<table border="1"> <tr> <td data-bbox="453 882 794 1585">Basic literature</td> <td colspan="2" data-bbox="799 882 1492 1585"> <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> </td> </tr> <tr> <td data-bbox="453 1592 794 1928">Supplementary literature</td> <td colspan="2" data-bbox="799 1592 1492 1928"> <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> </td> </tr> <tr> <td data-bbox="453 1935 794 1966">eResources addresses</td> <td colspan="2" data-bbox="799 1935 1492 1966">Adresy na platformie eNauczanie:</td> </tr> </table>			Basic literature	<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>		Supplementary literature	<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>		eResources addresses	Adresy na platformie eNauczanie:	
Basic literature	<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>											
Supplementary literature	<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>											
eResources addresses	Adresy na platformie eNauczanie:											
Example issues/ example questions/ tasks being completed												
Work placement	Not applicable											