GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Ship and Offshore Processes and Operations, PG_00048411		
Field of study	Ocean Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2022/2023
Education level	second-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	1	Language of instruction	English
Semester of study	1	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	prof. dr hab. inż. Wiesław Tarełko	
	Teachers		

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	15.0	0.0	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	5.0	35.0	100

Subject objectives	Provide students with basic knowledge about types of modern technology processes and technical operations carried out on the seas and oceans-related transport, rigging or anchoring facilities for the prospection, exploration and exploitation of natural resources.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U06] when forming and solving design tasks can see their non-technical aspects, including environmental, economical and legal ones. Applies HSE rules and regulations	Student understands needs and takes into account the impact of installation and operation of transport and foundation or anchoring properties, as well as influence of their exploitation on the marine environment	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[K7_W07] has knowledge on the development perspectives of ocean technology objects and systems, knows the newest and most relevant achievements in ocean technology	Student when developing technology of transport operations and installation of offshore units and processes of their operation uses knowledge from both the range of ocean engineering and mechanical engineering. He is able to perform simple calculations on equipment parts related to operation of ships and other offshore units	[SW1] Assessment of factual knowledge
[K7_U07] in compliance with a formulated specification and with the aid of appropriate tools and methods, is able to complete an advanced engineering task within the range of design, construction and operation of ocean technology objects and systems	Student understands the physical phenomena which accompany operations and processes of technical activities related to offshore units and can include them in your design work Student keeps track of the technical development in design of offshore units and their equipment and he is able to apply them in design process and work organization	[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
[K7_W05] has an organized, widened knowledge on design, construction and operation of ocean technology objects and systems	Student is able to analyze the new design solutions and technologies and certain operations or operational processes, and then he is able to assess their advantages and disadvantages in order to possibly use in your design work. He is familiarized with contemporary computing systems and can perform analytical calculations and validate their performance	[SW1] Assessment of factual knowledge

Subject contents	**SYSTEMS FOR SEARCHING OIL AND GAS UNDER THE SEABED** Oil and gas formation Techniques used to locate reserves Seismic survey technique Seismic survey vessels (SSV) Seismic streamer and its components Operational performance **SYSTEMS FOR EXTRACTING OIL AND GAS FROM THE SEABED** Structures of offshore oil and gas recovery units Basic offshore rig components **STATIONARY MARINE DRILLING UNITS** Fixed Jacked Platforms Jack-up Platforms Gravity base platforms Compliant towers **STRUCTURES THAT FLOAT NEAR THE WATER SURFACE** TLP (Tension Leg Platform) Platforms SPAR (Single Point Anchor Reservoir) Platforms Semi-submersible rigs Drilling ships Floating production systems **STATION KEEPING SYSTEMS** Mooring lines and their components (lines of mooring systems; anchors and connectors) Station keeping systems of FPSO (turret systems) Dynamic positioning systems and their elements (position reference systems, propellers)

	DRILLING AND PRODUCTION EQUIPMENT (selected issues) What is the drilling process? Drilling equipment (drillstring; blowout preventer) What is the production process? (offshore riser systems; drive mechanism of rigs) **OFFSHORE OIL DRILLING PROCESS (selected issues)** Types of offshore oil drilling Vertical (conventional) drilling Directional (slant) drilling Extraction process **PRODUCTION TECHNOLOGY (selected issues)** Essential components of offshore production systems Offshore un-manned platforms Types of subsea installations and equipment **LAYING PIPE ON THE SEAFLOOR (selected issues)** Offshore pipeline Route selection Ways of laying pipe on the seafloor Pipelay process Trenching and burial of offshore pipelines Pipeline welding technology Types of pipelay vessels
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lectures - test	66.0%	49.0%
	excercises	51.0%	26.0%
	laboratory	51.0%	25.0%
Recommended reading	Basic literature	Bai Yong, Bai Qiang: Subsea Enginering Handbook,Elsevier New York 2012. Chakrakarti S. Handbook of Offshore Engineering I and II, Offshore Structure Analysis, Inc. Plainfield, Illinois, USA, 2005.	
	Supplementary literature	Tarełko W. Power Take-off Systems of Offshore Rig Power Plants. Journal of Polish CIMAC. Vol. 5 No 1. 2010. pp. 187-198	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Positive displacement of tension leg platform (TLP) is obtained by: a) locking the platforms draft below the fixed and variable payload displacement draft b) locking the platforms draft below only constant payload displacement draft c) locking the platforms draft beneath the fixed and variable payload displacement draft d) locking the platforms draft beneath only constant payload displacement draft		
Work placement	Not applicable		