



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

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 Engineering Handbook, Elsevier New York 2012. Chakrakarti S. Handbook of Offshore Engineering I and II, Offshore Structure Analysis, Inc. Plainfield, Illinois, USA, 2005.	
	Supplementary literature	Tarelko 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: <ul style="list-style-type: none"> 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		