



Subject card

Subject name and code	, PG_00043283						
Field of study	Coastal and Offshore Engineering, Coastal and Offshore Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject				2021/2022	
Education level	second-cycle studies	Subject group				Obligatory subject group in the field of study 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				Polish	
Semester of study	1	ECTS credits				3.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Ship Manufacturing Technology, Quality Systems and Materials Science -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Wiesław Tarełko				
	Teachers		dr inż. Mohamed Behiil prof. dr hab. inż. Wiesław Tarełko				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45	5.0		25.0	75	
Subject objectives	<p>The objective of the subject is:</p> <ul style="list-style-type: none"> - to educate students with skills concerning learning and analysis related to offshore units, - to transfer the basic knowledge regarding to types of present technologies connected with offshore processes and operations to be carried out on the high seas and concerning oceans transport, foundations of offshore units, and their moorings properties 						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	K7_W05		Student has systematic and expanded knowledge in the design, construction and operation of offshore systems			[SW1] Assessment of factual knowledge	
	K7_U07		The student is able to perform advanced of engineering tasks connected with design, manufacture and operation of offshore systems in accordance with the formulated subject specifics and using appropriate methods and tools			[SU4] Assessment of ability to use methods and tools	

Subject contents

STATION KEEPING SYSTEMS OF OFFSHORE FLOATING UNITS

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)

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

PRODUCTION TECHNOLOGY

Process of extracting oil and gas from the well

Essential components of offshore production systems

Offshore un-manned platforms

Types of subsea installations and equipment

OFFSHORE UNDERWATER PIPELINES

Ways of laying pipe on the seafloor

Installation of pipelines and pipeline welding technology

Trenching and burial of offshore pipelines

Types of pipelaying vessels

OFFSHORE WIND FARMS

Prognoses for the development of offshore wind farms

Fundamentals of wind energetics

Key elements of offshore wind farms

Design solutions of turbine load-bearing structures

Infrastructure for transmission and conversion of electricity

Foundations of wind turbines

Regulations for location of offshore wind farms

Vessels designed for transport, installation and operation of offshore wind farms

OFFSHORE TIDAL POWER PLANTS

Prospects for offshore tidal power plants

Fundamentals of tidal energetics

Design solutions of offshore tidal power plants

Foundations of offshore tidal power plants

Prerequisites
and co-requisites

Assessment methods
and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory	51.0%	49.0%
lecture - test	66.0%	51.0%

Recommended reading	Basic literature	<p>Günther Clauss, Eike Lehmann, Carsten Østergaard. Offshore Structures: Volume I and Volume II. Springer 2012</p> <p>Huacan Fang and Menglan Duan. Offshore Operation Facilities. Equipment and Procedures. http://www.sciencedirect.com/science/book/9780123969774</p> <p>Subrata K. Chakrabarti. Handbook of Offshore Engineering. Elsevier 2005.</p> <p>Charlier, R. H., Finkl, Charles W. Ocean Energy. Tide and Tidal Power. Springer. 2009.</p>
	Supplementary literature	Bai Yong, Bai Qiang: Subsea Engineering Handbook, Elsevier New York 2012.
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Positive displacement of tension leg platform (TLP) is obtained by:</p> <p>a) locking the platforms draft below the fixed and variable payload displacement draft</p> <p>b) locking the platforms draft below only constant payload displacement draft</p> <p>c) locking the platforms draft beneath the fixed and variable payload displacement draft</p> <p>d) locking the platforms draft beneath only constant payload displacement draft</p>	
Work placement	Not applicable	