



## Subject card

Subject name and code	Underwater Technology, PG_00046541						
Field of study	Ocean Engineering, Ocean Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	8		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Lech Rowiński				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	0.0	0.0	20
	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	20		3.0		27.0	50
Subject objectives	To acquaint the student with the basic technologies of underwater works and deep-sea devices used in oceanology, in marine mining industries, aquaculture, military operations and tourism. Acquainting with the basic design problems specific to the underwater technique.						
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		He knows the legal and logical foundations of the process of developing deep-sea devices		[SW1] Assessment of factual knowledge		
	[K6_W08] has knowledge of the principles of sustainable development		Has knowledge of ecological issues related to deep-sea works		[SW1] Assessment of factual knowledge		
	[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		Can formulate a task concerning the selection of the device to the functions of the underwater system for the given environment		[SU1] Assessment of task fulfilment		
Subject contents	Features and parameters of the underwater environment; History of underwater technology; Man beneath the sea- diving and control of the system.Components of underwater systems and submersible; Critical materials and solutions used in underwater systems. Underwater tasks, tools and equipments; Work subsystem and components. Vizualization of water space, Navigation, communication, oceanological equipment, manipulators. Motion systems of submersibles; Power sources and power supply systems. Resistance of structures against marine environment-hydrostatic pressure, corrosion.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Test starting every lecture		60.0%		100.0%		

Recommended reading	Basic literature	<p>1. Allmendinger E.E.: "Submersible vehicle systems design";The Society of Naval Architects and Marine Engineers (SNAME),601Pavina Avenue,Jersey City, NY07306, 1990.</p> <p>2. Brahtz J.F.: "Oceanotechnika"; Wydawnictwo Morskie,1974.</p>
	Supplementary literature	<p>Journals</p> <p>1. Sea Technology</p> <p>2. International Ocean Systems</p> <p>3. Offshore</p> <p>4. Ocean News and Technology</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	