



Subject card

Subject name and code	Underwater Technology, PG_00056423						
Field of study	Ocean Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024		
Education level	first-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	3		Language of instruction		Polish		
Semester of study	6		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		dr hab. inż. Lech Rowiński				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		3.0		17.0	50
Subject objectives	Provide the student with basic knowledge regarding underwater technology and equipments utilized in oceanology, offshore industries, aquaculture, military activities and tourism. Provide the student with design methods specific to underwater technology.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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 conditions and technical solutions characteristic of devices operating submerged in sea water		[SW1] Assessment of factual knowledge		
	[K6_W08] has knowledge of the principles of sustainable development		The student knows the basic principles of organizing activities and designing deep-sea devices limiting the negative impact of technical activity on the environment and cultural monuments		[SW1] Assessment of factual knowledge		
Subject contents	Particular 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		
	Short test on 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> <p>3. Olszański R., Skrzyński S., Kłos R.: Problemy medycyny i techniki nurkowej, Okrętownictwo i Żegluga, 1997</p> <p>4. Macke J., Kuszewski K., Zieleniec G.: Nurkowanie, Wydawnictwo Sport i Turystyka, Warszawa, 1989.</p> <p>5. Rowiński L.: Technika Głębinowa, WIB, Gdańsk, 2008.</p> <p>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> <p>3. Olszański R., Skrzyński S., Kłos R.: Problemy medycyny i techniki nurkowej, Okrętownictwo i Żegluga, 1997</p> <p>4. Macke J., Kuszewski K., Zieleniec G.: Nurkowanie, Wydawnictwo Sport i Turystyka, Warszawa, 1989.</p> <p>5. Rowiński L.: Technika Głębinowa, WIB, Gdańsk, 2008.</p>
	Supplementary literature	<p>Journals:</p> <p>1. Sea Technology</p> <p>2. Oceanology International</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	