



## Subject card

Subject name and code	, PG_00056129						
Field of study	Mechatronics						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group				
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						
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		0.0		0.0	30
Subject objectives	The aim of the course is to familiarize the student with marine systems and devices that require the integration of mechanical engineering, automation, electronics, electrical engineering and computer science,						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W08] knows and understands design and production processes of elements and simple mechatronic devices		The student knows the construction of a remotely controlled electro-mechanism adapted to work in immersion		[SW1] Assessment of factual knowledge		
	[K6_W10] has a basic knowledge about development trends in terms of engineering and technical sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering, adequate for Mechatronics curse		The student has knowledge of the basic development trends in mechanical engineering, automatics, electronics, electrical engineering and information technology in marine systems and devices		[SW1] Assessment of factual knowledge		
	[K6_W11] has a basic knowledge about the life cycle of mechatronic systems and objects		The student understands the essence of the concept of the life cycle, including the research and research and development phase		[SW1] Assessment of factual knowledge		
	[K6_U05] is able to use properly choosen tools to compare design solutions of elements and mechatronics systems according to given application and economic crtierions (e.g. power demand, speed, costs)		The student is able to compare design solutions using methods of value analysis based on established criteria		[SU2] Assessment of ability to analyse information		
	[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics		The student is able to determine the composition of the device intended for remote work and its system environment		[SU2] Assessment of ability to analyse information		
Subject contents	Marine robotic systems; The place of man in the marine system; Legal issues related to the use of robotic devices; Product life cycle; Technology readiness levels; Technical documentation management; Conformity assessment; Materials for marine mechanisms; Corrosion protection; Ways of isolating sensitive devices from the environment; Static and movement seals; Electric and fiber optic cables and cable connectors; Imaging space above and in water; Hydraulic and electrical manipulators; Navigation in sea conditions; Communication lines. and information transmission; Preparation of the working environment of robotic devices.						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	e-test during every lecture	60.0%	100.0%
Recommended reading	Basic literature	1. Allmendinger E.E.: "Submersible vehicle systems design";The Society of Naval Architects and Marine Engineers (SNAME),601Pavinia Avenue,Jersey City, NY07306, 1990.  2. Olszański R., Skrzyński S., Kłos R.: Problemy medycyny i techniki nurkowej, Okrętownictwo i Żegluga, 1997  4. Rowiński L.: "Technika Głębinowa", WIB, Gdańsk, 2008.  5 Drew M., Wernli R.L: "Operational Efectiveness of Unmanned Underwater Systems", Marine Technology Society, 1999,	
	Supplementary literature	Magazines  1. Sea Technology  2. International Ocean Systems  3. Offshore	
	eResources addresses	Podstawowe <a href="https://www.offshore-mag.com">https://www.offshore-mag.com</a> - Magazine and website devoted to organization and technology in maritime industries <a href="https://mailchi.mp/ecomagazine.com">https://mailchi.mp/ecomagazine.com</a> - Journal and web site devoted to ecology and sustainable development <a href="https://mailchi.mp/oceannews">https://mailchi.mp/oceannews</a> - Ocean News and Technology Magazine and website dedicated to underwater organization and technology in maritime industries Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		