



## Subject card

Subject name and code	, PG_00056313						
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	5		ECTS credits		3.0		
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		dr inż. Konrad Marszałkowski				
	Teachers		dr inż. Konrad Marszałkowski				
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		4.0		26.0	75
Subject objectives	The aim of the course is to introduce students to the basic and most important principles of regulation, control and monitoring of a ship's engine room, together with a detailed discussion of issues related to the technique of measuring electrical and non-electrical quantities.						
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		The student explains the role and principles of operation of measuring elements in a marine power plant. The student presents the role and principles of operation of the elements of automatic control systems.		[SW1] Assessment of factual knowledge		
	[K6_W04] has a basic knowledge in IT, electronics, automation and control, computer graphics useful to understand the possibilities of their application in ocean technology		The student lists the requirements for the control of marine actuator components and shows the method of automatic adjustment of these components.		[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		The student lists the criteria for the selection and scope of ship automation, taking into account the technical, economic and ecological aspects of the ship's propulsion.		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	1. Automation of marine power plants.2. Dynamics of the ship's propulsion system.3. Logic control - switching systems and relays. Goal logic.4. Programmable controllers and their programming.5. Controlling the ship's propulsion system - servomechanisms, regulating valves.6. Angular speed regulators, remote control of the drive system, control of multi-propulsion and multi-engine drive systems.7. Measuring converters, types and classification.8. Position and displacement converters. Angular velocity transducers.9. Force, pressure and temperature transducers.10. Flow and level transmitters for liquids and gases.11. Control of components of marine engine rooms - temperature control of cooling water and lubricating agent. 12. Adjustment of the fuel system.13. Control of engine start and stop.14. Start-up and control of a ship power plant.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	40.0%
		60.0%	60.0%
Recommended reading	Basic literature	1. Domachowski Z., Ghaemi M. (2007). Okrętowe układy automatyki. Gdańsk. Wydawnictwo Politechniki Gdańskiej.  2. Lisowski J. (1981). Statek jako obiekt sterowania automatycznego. Gdańsk. Wydawnictwo Morskie.  3. Soldek J. (1985). Automatyzacja statków. Gdańsk. Wydawnictwo Morskie.	
	Supplementary literature	1. Wojnowski W.: Okrętowe silownie spalinowe. Morski Instytut Rybacki. Gdynia 1991. Część II.	
	eResources addresses	Adresy na platformie eNauczanie: Automatyzacja systemów i urządzeń oceanotechnicznych, W, OCE, sem. 5, zimowy 2023/24 - Moodle ID: 33406 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33406">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33406</a>	
Example issues/ example questions/ tasks being completed	1. Regulator, block structure, application2. Methods of measuring linear and angular displacements3. Preparation of marine piston engine for start-up4. Servomechanism - principle of operation		
Work placement	Not applicable		