



Subject card

Subject name and code	Automation of Processes and Means of Transportation, PG_00060675						
Field of study	Automatyzacja procesów i środków transportowych						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
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		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Division of Marine Auxiliary Machinery -> Institute of Naval Architecture -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Konrad Marszałkowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	30.0	0.0	60
	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	60		5.0		60.0	125
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_U01] can obtain information from literature, databases and other sources; verify and systematize the information obtained, interpret it and draw conclusions, formulate and justify opinions	The student is able to develop and present independently developed results of the analysis of existing solutions used in control systems used in transport.	[SU1] Ocena realizacji zadania [SU2] Ocena umiejętności analizy informacji [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania
	[K6_W04] has well established knowledge in the field of computer science, electronics, automation and control, information technology and computer graphics, useful for understanding the possibilities of applying them in transport	The student is able to use basic knowledge in the field of computer science, electronics, control, information technology, computer graphics, enabling its application in transport.	[SW1] Ocena wiedzy faktograficznej [SW2] Ocena wiedzy zawartej w prezentacji [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
	[K6_U04] is skilled in self-educating in order to develop his professional qualifications, is prepared to work in an industrial environment, applies the principles of occupational health and safety	The student is able to use basic knowledge in the field of hydromechanics, thermodynamics, machine design, materials science, electrical engineering, and environmental protection, enabling them to understand the basics of construction and operation of water transport.	[SU1] Ocena realizacji zadania [SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania
	[K6_W07] has general knowledge in the field of humanities, social and economic sciences. Knows the principles of creating forms of individual entrepreneurship and running a business, and knows how to protect industrial and intellectual property and copyright law	The student will be familiar with basic concepts and theories in the humanities, social sciences, and economics. They will be knowledgeable about the principles of market economy operation and the various forms of conducting business. They will also understand the importance of intellectual property, industrial property, and copyright protection in professional activities.	[SW1] Ocena wiedzy faktograficznej [SW2] Ocena wiedzy zawartej w prezentacji [SW3] Ocena wiedzy zawartej w opracowaniu tekstowym i projektowym
Subject contents	Course content – lecture		
	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	Course content – project		
	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.		
Assessment methods and criteria			
	Subject passing criteria	Passing threshold	Percentage of the final grade
		60.0%	60.0%
Assessment methods and criteria		60.0%	40.0%

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	
Example issues/ example questions/ tasks being completed	1. Regulator, block structure, application 2. Methods of measuring linear and angular displacements 3. Preparation of marine piston engine for start-up 4. Servomechanism - principle of operation	
Practical activities within the subject	Not applicable	

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