

Subject card

Subject name and code	Fundamentals of Automatics - classes , PG_00201106						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2027		Academic year of realisation of subject			2028/2029	
Education level	Bachelor's studies		Subject group			Obligatory subject group in the field of study Subject group related to practical vocational preparation	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	2		Language of instruction			Polish	
Semester of study	3		ECTS credits			0.0	
Learning profile	practical		Assessment form			credit	
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Bogdan Żak				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	8.0	0.0	0.0	0.0	8
	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	8		1.0		2.0	11
Subject objectives	To impart knowledge of the construction and principle of operation of automatic control systems; To learn and consolidate methods of analytical determination of dynamic characteristics of automatic control elements and systems; To learn and consolidate methods of transformation of UAR block diagrams, To develop the ability to practically use criteria for evaluating stability and quality of regulation. Developing the ability to perform mathematical analysis of automatic control systems.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[HML3-U18] is able to work individually and in team, manage the work of the team, in particular comply with health and safety regulations and ergonomics		is able to: - interact and work in a practice group, - individually solve UAR analysis tasks			[SU6] demonstration of practical skills	
	[HML3-U01] is able to plan and conduct experiments, including computer simulations, interpret the results obtained and draw conclusions		is able to: - describe the behavior of a control object and a control system in the time and frequency domain; - present practical examples of basic control systems; - perform calculations to determine the dynamic characteristics of automatic control systems and evaluate their stability and control quality			[SU6] demonstration of practical skills	
Subject contents	Exercises: Solving differential equations by Laplace transform. Determination of time characteristics of UAR. Determination of frequency characteristics of UARs. Block diagram algebra and stability criteria.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	colloquium		51.0%			100.0%	

Recommended reading	Basic literature	1. BEŃSKI J., KICIŃSKI W., ŻAK B.: Automatics. Part III. Laboratory exercises. AMW, Gdynia 1990. 2. KACZOREK T.: Fundamentals of control theory. WNT, Warsaw 2005. 3. KITOWSKI Z.: Automatics. Accounting exercises. AMW, Gdynia 1989.
	Supplementary literature	OGATA K.: Modern Control Engineering. Wiley and Sons, 2013.
	eResources addresses	
Example issues/ example questions/ tasks being completed	From the operator transmittance of the system, determine its dynamic characteristics; Investigate the stability of the system using stability criteria; Determine the transmittances of the system from its block diagram;	
Work placement	Not applicable	

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