University of Gdańsk

Subject card

Subject name and code	Fundamentals of Automatics - lecture, PG_00201108						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2027/2028			
Education level	Bachelor's studies		Subject group	Obligatory subject group in the field of study			
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	1.0			
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	10.0	0.0	0.0	0.0	0.0	10
	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	10		1.0		14.0	25
Subject objectives	To impart knowledge about the construction and principle of operation of automatic control systems.To learn methods of description of automatic control systems, to master methods of analysis of linear automatic control systems and methods of stability testing.To develop the ability to determine the dynamic characteristics of linear systems and determine on their basis the dynamic properties of the object, and to analyze automatic control systems.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[HML3-W01] knows and understands, at an advanced level, selected facts, phenomena and processes, as well as methods and theories concerning them, explaining the complex relationships between them, constituting basic general knowledge in the field of scientific disciplines forming the theoretical foundations specific to the field of study	knows at an advanced level: - the structures and operating principles of automatic control systems; - methods for analyzing linear automatic control systems; - methods for describing linear automatic control systems and methods for analyzing them	[SW4] test/exam - oral or written
[HML3-W03] knows and understands, at an advanced level, directions of development and the latest discoveries in the field of scientific disciplines forming the theoretical basis appropriate to the field of study	knows the latest trends in marine automation systems	[SW4] test/exam - oral or written
[HML3-W12] knows and understands, at an advanced level, the key processes occurring in the life cycle of devices, facilities, and technical systems	knows and understands at an advanced level: - the structures and operating principles of automatic control systems; - transfer function models of basic dynamic systems; - methods for describing and analyzing linear automatic control systems	[SW4] test/exam - oral or written

Subject contents

Basic concepts of automation. Classification of UARs. Mathematical description of UARs. Dynamic characteristics. Basic dynamic members of automatic control systems. Stability of linear automatic control systems. Block diagrams in automation. Quality of linear automatic control systems.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test	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

Types of dynamic characteristics of UARs; Criteria and conditions for stability of UARs; Criteria for quality of regulation; Classification of UARs, What is the linearization of systems, Basic dynamic members of UARs and their characteristics.

Work placement

Not applicable

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