

## 。 GDAŃSK UNIVERSITY OF TECHNOLOGY

## Subject card

Subject name and code	Control Theory, PG_00057473								
Field of study	Automation, Robotics and Control Systems								
Date of commencement of studies	February 2025		Academic year of realisation of subject			2024/2025			
Education level	second-cycle studies		Subject group						
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			Polish			
Semester of study	1		ECTS credits			5.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Katedra Inteligentnyc Engineering	erowania i Wspomagania Decyzji -> Faculty of Electrical and Control							
Name and surname	Subject supervisor		dr hab. inż. Robert Piotrowski						
of lecturer (lecturers)	Teachers								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	poratory Project		Seminar	SUM	
	Number of study hours	45.0	0.0	0.0	15.0		0.0	60	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation h	articipation in Insultation hours		udy	SUM	
	Number of study hours	60		10.0		55.0		125	
Subject objectives	The aim of the course is to present the current achievements of the control theory for the different categories of control systems, e.g.: continuous - discrete, linear - nonlinear, deterministic - stochastic. It will be present the results of modern control theory and the most important results of control theory.								
Learning outcomes	Course outcome Subject outcome Method of verification						ication		
	[K7_U07] is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks and simple research problems in the field of automation and robotics		<ol> <li>The student selects the control algorithm to the control task.</li> <li>The student examines the control systems (simulation tests).</li> </ol>			[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools			
	[K7_W06] has an extended knowledge of the design of automation components and devices, control and decision support systems control and decision support systems and complex mechatronic systems		<ol> <li>The student knows the classical and modern control methods.</li> <li>The student designs and analyzes the effect of the selected control system.</li> </ol>			[SW3] Assessment of knowledge contained in written work and projects			
Subject contents	Properties of a dynamic system (lecture, project). Control design in state space (lecture, project). Elements of observer theory (lecture, project). Optimal control (lecture). Adaptive control (lecture).								
Prerequisites and co-requisites	No requirements.								
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade			
	Exam		50.0%			70.0%			
	Project		50.0% 30.0%						
Recommended reading	Basic literature	<ol> <li>Byrski W. Obserwacja i sterowanie w systemach dynamicznych. Uczelniane Wydawnictwa Naukowo Dydaktyczne Akademii Górniczo Hutniczej w Krakowie, 2007.</li> </ol>							
		2. Hendricks, E., Jannerup, O., Sorensen, P.H. (2008). Linear Systems Control, Deterministic and Stochastic Methods. Springer Verlag.							

	Supplementary literature	1. Ostertag, E. (2011). Mono- and Multivariable Control and Estimation. Springer Verlag.			
		2. Fen, L. (2007). Robust Control Design - An Optimal Control Approach. John Wiley & Sons.			
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed	1. For a given pair of matrices (A, C) use Ackermann formula and calculate the matrix G, providing the specified allocation of the eigenvalues of the observer error dynamics.				
Work placement	Not applicable				

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