



## Subject card

Subject name and code	Dynamic Systems, PG_00038130						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2022/2023		
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		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Control Systems Engineering -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Robert Piotrowski				
	Teachers		dr hab. inż. Robert Piotrowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	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	30		3.0		17.0	50
Subject objectives	Presentation of the currently used forms of description of dynamic systems and methods of their analysis. Different categories of systems, methods of their description and methods of study of their properties will be presented.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U07		The student is able to build and analyze models of dynamic systems.		[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
	K6_W10		The student can analyze dynamic systems.		[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	1. Signals and Systems.  2. Outputs of the system.  3. Controllability and availability of the system.  4. Observability and detectability of the system.  5. Decomposition of the system.  6. Stability of the system.						
Prerequisites and co-requisites	There are no requirements						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Written exam		50.0%		70.0%		
	Exercises		0.0%		30.0%		

Recommended reading	Basic literature	<p>Byrski, W. (2007). Obserwacja i sterowanie w systemach dynamicznych. Uczelniane Wydawnictwa Naukowe – Dydaktyczne Akademii Górniczo – Hutniczej w Krakowie.</p> <p>Oppenheim, A. V., and A. S. Willsky, with S. H. Nawab. (1997). Signals and Systems. 2nd ed. New Jersey: Prentice-Hall.</p>
	Supplementary literature	Roffel, B., Betlem, B. (2006). Process Dynamic and Control. Modelling for Control and Prediction. John Wiley & Sons, Ltd.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>1. Find a description of the state space (the equation of state and the output equation) and draw a diagram using the iterative method.</p> <p>2. Check analytically whether the system satisfies the condition of additivity.</p>	
Work placement	Not applicable	