GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Dynamic Systems, PG_00038123		
Field of study	Automation, Robotics and Control Systems		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
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 Power Electronics and Electrical Machines -> 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 Tomasz Ujazdowski	

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 contemporary forms of description of dynamic systems and methods of analysis of their properties.
Different categories of systems, methods of describing them, ways of studying their properties will be presented.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W10	Students will be able to analyse dynamic systems.	[SW3] Assessment of knowledge contained in written work and projects
K6_U08	Students will be able to build and analyse models of systems dynamic systems.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools

Subject contents

1. Signals and systems.

2. System responses.

3. Controllability and reachability of the system.

4. Observability and detectability of a system.

5. System decomposition.

6. Stability of the system.

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written pass	50.0%	70.0%
	Exercises	50.0%	30.0%
Recommended reading	Basic literature	1. Byrski, W. (2007). Obserwacja i sterowanie w systemach dynamicznych. Uczelniane Wydawnictwa Naukowo Dydaktyczne Akademii Górniczo Hutniczej w Krakowie. 2. Oppenheim, A. V., and A. S. Willsky, with S. H. Nawab. (1997). Signals and Systems. 2nd ed. New Jersey: Prentice-Hall.	
	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: SYSTEMY DYNAMICZNE [AiSS][2023/24] - Moodle ID: 24439 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24439	
Example issues/ example questions/ tasks being completed	1. Find a description in state space (equations of state and equation of output) and draw a diagram using an iterative method. 2. Check analytically that the system satisfies the additivity condition.		
Work placement	Not applicable		