GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Adaptive Control, PG_00047497
Field of study	Automatic Control, Cybernetics and Robotics

Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
Education level	second-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	1	Language of instruction	English
Semester of study	2	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Automatic Control -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Kaczmarek
	Teachers	dr inż. Piotr Kaczmarek dr hab. inż. Michał Meller

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15	2.0	8.0	25

Subject objectives	Presentation of principles and basic techniques of adaptive control

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U02] can perform tasks related to the field of study as well as formulate and solve problems applying recent knowledge of physics and other areas of science	Can implement a selected adaptive controller	[SU1] Assessment of task fulfilment
	[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.	Knows and understands the structure and the principle of operation of adaptive control systems Knows and understands selected adaptive control algorithms, which include algorithms with the direct and indirect adaptation Knows and understands system identification algorithms and their role in adaptive control	[SW2] Assessment of knowledge contained in presentation
	[K7_W06] Knows and understands, to an increased extent, the basic processes taking place in the life cycle of devices, facilities and technical systems.	Knows and understands the sources of changes in the linear model of the controlled plant	[SW1] Assessment of factual knowledge

Subject contents	1. Introduction 2. System identification 3. Adaptive pole placement controller 4. Stochastic self-tuning regulators 5. Dual control 6. Adaptive feedforward controllers 7. Analysis of adaptive systems 8. Implementation of adaptive systems
Prerequisites and co-requisites	Knowledge of discrete-time control theory

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Implementation of selected adaptive controller	60.0%	100.0%

Recommended reading	Basic literature	K. J. Astrom, B. Wittenmark, Adaptive Control, Addison-Weasley, 1995
	Supplementary literature	S. Sastry, M. Bodson, Adaptive Control: Stability, Convergence and Robustness, Prentice Hall 1994
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable