



Subject card

Subject name and code	Adaptive Control, PG_00047497						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	February 2023	Academic year of realisation of subject				2023/2024	
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				
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_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	
	[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_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	
Subject contents	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. System identification</li> <li>3. Adaptive pole placement controller</li> <li>4. Stochastic self-tuning regulators</li> <li>5. Dual control</li> <li>6. Adaptive feedforward controllers</li> <li>7. Analysis of adaptive systems</li> <li>8. Implementation of adaptive systems</li> </ol>						
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-Wesley, 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		