



Subject card

Subject name and code	Interferences in the operation of automation and control systems, PG_00059861						
Field of study	ZAKŁÓCENIA W PRACY UKŁADÓW AUTOMATYKI I STEROWANIA						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Power Electronics and Electrical Machines -> Faculty of Electrical and Control Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jarosław Łuszcz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		10.0		45.0	100
Subject objectives	Transfer of knowledge about the causes of interference of devices in control systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W11] knows the hazards arising from devices, installations, systems and technical systems, basic principles of occupational health and safety, taking into account the role of control and security systems in controlling automation and robotics facilities		assesses threats from devices and installations		[SW1] Ocena wiedzy faktograficznej		
	[K6_W06] knows the structure of computers and microprocessors and the tasks of operating systems, has basic knowledge of the basics of computer software, drivers, microprocessor technology, design of simple algorithms and the operation of information networks		applies knowledge related to interference in computer systems		[SW1] Ocena wiedzy faktograficznej		
	[K6_K05] can think and act in an entrepreneurial way		applies the principles of entrepreneurship		[SK3] Ocena umiejętności organizacji pracy		
	[K6_U04] has the ability to self-educate, among other things, in order to improve professional qualifications		acquires knowledge through self-education		[SU2] Ocena umiejętności analizy informacji		
	[K6_W07] has basic knowledge related to control and automation systems		applies knowledge related to disturbances in control and automation systems		[SW1] Ocena wiedzy faktograficznej		

Subject contents	Course content – lecture 1. LECTURE Sources and propagation of conducted and radiated electromagnetic disturbances. Electromagnetic emission and immunity of electrical devices. Typical causes of interference in control and automation systems. LABORATORY Measurements of conducted and radiated electromagnetic interference levels. Testing the immunity of devices to electromagnetic interference.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Active participation in the lecture	50.0%	50.0%
	Laboratory reports	50.0%	50.0%
Recommended reading	Basic literature	Charoy, Alain i in. Kompatybilność elektromagnetyczna: Zakłócenia w urządzeniach elektronicznych. Tom 1, 2, 3 i 4. Warszawa: Wydawnictwa Naukowo-Techniczne, 1999. L. Hasse, J. Kołodziejski, Z. Karkowski, A. Konczakowska, L. Spiralski: Zakłócenia w aparaturze elektronicznej. Warszawa: "Radioelektronik ", 1995.	
	Supplementary literature	Kempski, Adam Józef, Elektromagnetyczne zaburzenia przewodzone w układach napędów przekształtnikowych. Zielona Góra: Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, 2005. Łuszcz, Jarosław. High Frequency Conducted Emission in AC Motor Drives Fed By Frequency Converters: Sources and Propagation Paths. John Wiley and Sons, Inc., Hoboken, N.J: 2018.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Checking the immunity of selected electronic devices to electromagnetic disturbances.		
Practical activities within the subject	Not applicable		

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