

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Industrial Electronics, PG_00038477								
Field of study	Electrical Engineering								
Date of commencement of studies	February 2025		Academic year of realisation of subject			2025/2026			
Education level	second-cycle studies		Subject group						
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			Polish			
Semester of study	2		ECTS credits			2.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department Of Electrified Transportation -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej								
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Leszek Jarzębowicz						
	Teachers								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
	Number of study hours	15.0	0.0	15.0	0.0		0.0	30	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	30		10.0		10.0		50	
Subject objectives	Getting to know various solutions and technical conditions for the use of electronic devices in industrial environment.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K7_W06] has an in-depth knowledge of industrial electronics, microprocessor control systems and in the field of power electronics and drive systems, their control and diagnostic methods		He/she describes the construction and principle of operation of angular position and velocity transducers used in electric drives.			[SW1] Assessment of factual knowledge			
	[K7_U04] is able to select industrial electronics equipment and prepare their software, design systems microprocessor systems		He/she designs a motion program code for electric servo drive.			[SU1] Assessment of task fulfilment			
Subject contents	LECTURE: Optical fibers. Electromagnetic interferences in electronic devices. Electric servo drives. Intelligent power modules. Microprocessor-based control of electronic devices. Angular position and velocity measurement systems. Contactless electric power transmission systems. Industrial vision methods based on laser triangulation. LAB: Oscilloscope-based signal recording. Programming of the Control Techniques servo drive. Distance measurement in a distributed industrial system. Power electronic converters in installations with alternative energy sources. Transducers of force, acceleration and angular displacement. Servo drive - programming of motion parameters.								
Prerequisites and co-requisites	Basic knowledge of: electrical engineering, electronics, power electronics, microprocessor systems.								
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade				
	Lab raports and prep verification	aration	60.0%						
	Lecture-part test		60.0%			70.0%			

Recommended reading	Basic literature	Mohan N.: Power Electronics. A First Course. John Wiley & Sons, Inc. 2012. Younkin G. W.: Industrial Servo Control Systems. Fundamentals and Application. Marcel Dekker 2003. Czasopismo "IEEE Transactions of Industrial Electronics" (dostęp poprzez Bibliotekę PG)			
	Supplementary literature	 Wilamowski B. M., Irwin J. D.: The Industrial Electronics Handbook. Power electronics and motor drives. CRC Press, Taylor and Francis Group, LLC, 2011. Tobin S. M.: DC Servos. Application and Design with MATLAB. Press, Taylor and Francis Group, LLC, 2011. Grzesiak L.M.: Sterowanie napędów i serwonapędów elektrycznych. Preskrypt. Politechnika Warszawska 2009. 			
	eResources addresses	Adresv na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed	 Discuss the operating principle and output waveforms of an incremental encoder. Discuss the structure and operating principle of a vision system for three-dimensional scanning. 				
Work placement	Not applicable				

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