



Subject card

Subject name and code	Sensors in Robots, PG_00038127						
Field of study	Automation, Robotics and Control Systems						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2024/2025		
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		exam		
Conducting unit	partment of Metrology and Information Systems -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Dariusz Świsulski				
	Teachers						
Lesson types and methods of instruction	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		7.0		48.0	100
Subject objectives	The aim of the course is to provide the student with knowledge about sensors used in robots. The student will learn about the construction and operation of sensors and the principles of selecting sensors for a specific application.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W10] has basic knowledge related to mechatronics and robotics systems		Describes the structure and principle of operation of sensors used in robotics.		[SW1] Assessment of factual knowledge		
	[K6_U08] can design and build systems and devices in the field related to mechatronics and robotics systems		Selects sensors for a specific application.		[SU4] Assessment of ability to use methods and tools		
Subject contents	LECTURE Introduction to sensor systems. Classification of sensors. Static and dynamic properties of measuring sensors. Position and displacement measuring systems. Velocity measuring systems. Touch sensor systems. Presence and proximity sensor systems (ultrasonic sensors, optoelectronic sensors, inductive sensors, magnetic field sensors, capacitive sensors). Vision systems. LABORATORY Inductive sensors. Capacitive sensors. Optoelectronic sensors. Ultrasonic sensors. Magnetic field sensors and limit switches. Angular position sensors. Vision sensors.						
Prerequisites and co-requisites	Basic metrology knowledge.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Lecture - midterm colloquium and oral exam		60.0%		70.0%		
	Assessment of laboratory exercises and home written reports		60.0%		30.0%		
Recommended reading	Basic literature		Świsulski D., Rafiński L.: Sensoryka robotów. Laboratorium. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2007 Honczarenko J.: Roboty przemysłowe. Budowa i zastosowanie. WNT Warszawa 2004				
	Supplementary literature		Zakrzewski J.: Czujniki i przetworniki pomiarowe. Wydawnictwo Politechniki Śląskiej. Gliwice 2004				
			Mukhopadhyay S.C., Huang R.Y.M.: Sensors. Springer 2008				

	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	1. Static and dynamic properties of sensors. 2. Structure and working principle of distance sensors. 3. Structure and working principle of photoelectric sensors. 4. Structure and working principle of encoders. 5. Structure and working principle of proximity sensors.	
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.