



## Subject card

Subject name and code	, PG_00056132						
Field of study	Mechatronics						
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			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Wiktor Sieklicki				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	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 didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		0.0		0.0	30
Subject objectives	Delivering to the students knowledge about various types of physical quantities converters (sensors) used in mechatronic systems						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W11] has knowledge about the life cycle of mechatronic systems and objects	Student presents phases of design and development of measurement systems			[SW1] Assessment of factual knowledge		
	[K6_W10] has knowledge about development trends in the field of engineering and technology sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics, Electrical Engineering and Space Technologies, adequate for Mechatronics course	Student presents types of sensors utilized in modern mechatronics systems			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U05] is able to use properly chosen tools to compare design solutions of elements and mechatronics systems according to given application and economic criteria (e.g. power demand, speed, costs)	Student chooses suitable types of sensors according to the given measurement task			[SU1] Assessment of task fulfilment		
	[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	Student formulates specification of simple measurement system			[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W08] knows and understands design and production processes of elements and simple mechatronic devices	Student describes process of elements selections and conditions that must be met by measurement systems dedicated to a given task			[SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Presenting operation principles, structure and applications of the most important types of transducers / sensors, e.g. displacements, velocity, acceleration, distance, strain, temperature, etc. sensors concentrating especially on types of sensors not presented to students during preceding courses. During laboratory exercises - performing measurement tasks with selected types of sensors.						
Prerequisites and co-requisites	Knowledge of topics from "Metrology and measurement systems", "Basics of digital signal processing" and "Elements of mechatronic systems" courses						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Finishing task given during laboratory classes	50.0%	35.0%
	Written test	55.0%	65.0%
Recommended reading	Basic literature	J. Fraden, Handbook of Modern Sensors: Physics, Designs, and Applications, Springer, 2016	
	Supplementary literature	Technical documentation of various types of sensors	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Select elements need for measurement of a given physical phenomena / quantity		
	Describe structure and operation principles of a given sensor type		
Work placement	Not applicable		