



Subject card

Subject name and code	, PG_00058631						
Field of study	Mechatronics						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Piotr Mioduszewski					
	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	To familiarize students with issues related to the construction and maintenance of mechatronic systems in modern vehicles.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U04] is able to utilise known methods and mathematical models, as well as computer simulations for analysis and evaluation of non-stationary continuous and discrete mechatronic systems and processes	The student is able to analyze the principles of operation of control systems of various mechatronic systems of modern vehicles.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
	[K7_W06] has detailed, supported by the theory knowledge in terms of mechatronic design, mechatronic systems and machines, devices and process where they are used	The student is able to describe the structure and principle of operation of individual mechatronic systems of modern vehicles.	[SW1] Assessment of factual knowledge
	[K7_W01] has extended knowledge in terms of selected areas of mathematics, including discrete and applied mathematics, optimisation methods, mathematical and numerical methods essential for: 1) modelling and analysis of nonstationary mechatronics, continuous and discrete time systems as well as physical phenomena; 2) description and analysis of mechatronic systems that include programmable devices 3) description and analysis of signal processing algorithms 4) synthesis of non-stationary mechatronic systems	The student is able to model mechatronic systems used in modern vehicles.	[SW3] Assessment of knowledge contained in written work and projects
	[K7_W10] knows development trends and most important new achievements in technical sciences and science disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering and related: Informatics and Materials Engineering	The student has basic knowledge of development trends in the construction and maintenance of mechatronic systems in modern vehicles.	[SW1] Assessment of factual knowledge
Subject contents	Active and passive safety systems in vehicles. "Intelligent" vehicle lighting systems. Driving and travelling comfort systems (driver assistance). Active vehicle suspension systems. Modern steering systems.		
Prerequisites and co-requisites	Knowledge of mechanics of machines and devices. Basic knowledge of vehicle construction. Basics of mechatronics, electronics, electrical engineering and computer science.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	100.0%
Recommended reading	Basic literature	Bosch Automotive Handbook 6th Edition, Bentley Publishers, USA, 2005 The Mechatronics Handbook By Robert H. Bishop, CRC Press, 2002. Current internet articles on solutions for mechatronic systems in vehicles and heavy machinery.	
	Supplementary literature	Mechatronics and the Design of Intelligent Machines and Systems By David A. Bradley, CRC Press, 2000.	
	eResources addresses	Adresy na platformie eNauczanie:	

Example issues/ example questions/ tasks being completed	Active and passive safety systems in vehicles.Vehicle lighting systems.Driving and travelling comfort systems.Active vehicle suspension systems.Modern steering systems.
Work placement	Not applicable

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