

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mechatronics od vehicles and working machinery, PG_00064798							
Field of study	Mechatronics							
Date of commencement of studies	February 2025		Academic year of realisation of subject			2025/2026		
Education level	second-cycle studies		Subject group			Specialty subject group Subject group related to scientific research in the field of study		
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 Shic				and Ship Tec	hnoloav		
Name and surname	Subject supervisor		dr hab, inż. Piotr Mioduszewski					
of lecturer (lecturers)	Teachers							
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Proiec	t	Seminar	SUM
of instruction	Number of study hours	15.0	0.0	15.0	0.0		0.0	30
	E-learning hours inclu	uded: 0.0						
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation h	n ours	Self-study S		SUM
	Number of study hours	of study 30		4.0		16.0		50
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 verifie					fication		
	[K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Mechatronics, enabling developement and synthesis of stationary and non- stationary mechatronic systems, devices, and processes with continuous and discrete operation		Student demonstrates basic knowledge of development trends in the construction and operation of mechatronic systems in modern vehicles.			[SW1] Assessment of factual knowledge		
	[K7_W04] demonstrates knowledge encompassing selected issues in the field of detailed knowledge, particularly in the scope of methods, techniques, tools, and algorithms specific to Mechatronics [K7_U11] communicates and justifies opinions on specialized topics in a manner understandable to diverse audiences, including the use of modern techniques, including information technology [K7_U03] identifies and formulates task specifications in the scope of stationary and non-stationary mechatronic systems/processes design, including non-standard problems ans taking into consideration their non-technical aspects		The student describes the structure and explains the principles of maitenence of mechatronic devices and systems in vehicles. Student is able to determine the correct operation of mechatronic systems in vehicles and indicate possible malfunctions. Student explains principles of operation of mechatronic devices and systems in vehicles.			[SW1] Assessment of factual knowledge [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
Subject contents	Controller area network, communication systems in vehicles (CAN, LIN). Sensors and controllers used in vehicles. Active and passive safety systems in vehicles (braking, traction control, skidding). Vehicle lighting systems (intelligent lighting systems). Driving and travelling comfort systems (parking assists, adaptive cruise control, information, navigation, ventilation, climate control, vehicle theft protection). Active vehicle suspension systems. Modern steering systems.							

Prerequisites and co-requisites	Knowledge of mechanics of machines and devices. Basic knowledge of the construction of machines and devices. Fundamentals of electronics and electrical engineering. Fundamentals of computer science.						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	Test	60.0%	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	Controller area network, communication systems in vehicles. Sensors and controllers used in vehicles. 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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