GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00072599		
Field of study	Mechatronics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
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	5	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Mechanical Vehicles and Military Technology -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Piotr Mioduszewski	
	Teachers		

Lesson types

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 operation of mechatronic systems in modern vehicles.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W10] has a basic 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 curse	The student demonstrates basic knowledge of development trends in the construction and operation of mechatronic systems in modern vehicles.	[SW1] Assessment of factual knowledge
[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)	The student explains the principles of operation of mechatronic devices and systems in modern vehicles.	[SU2] Assessment of ability to analyse information
[K6_U02] is able to elaborate on specific mechatronic topics as well as topics from engineering and technology sciences and disciplines such as Mechanical Engineering, Automation, Electronics, Electrical Engineering and Space Technologies	The student is able to determine the correctness of operation of mechatronic systems in vehicles, diagnose them for possible errors and indicate possible malfunctions.	[SU4] Assessment of ability to use methods and tools

Subject contents

Course content – lecture
Controller area network. Sensors and controllers used in vehicles. Power steering systems. Passive vehicle safety systems. Modern vehicle lighting systems.

Course content – laboratory
Electric progressive power steering. Modern automated vehicle lighting system. SRS – passive safety system. Selected vehicle system actuators.

Prerequisites and co-requisites

Knowledge of machine and device mechanics. Basic knowledge of machine and device construction. Basic knowledge of electronics and electrical engineering. Basic knowledge of 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	Current articles on solutions for mechatronic systems in vehicles (mainly from manufacturers of these systems as well as vehicle manufacturers).
	Supplementary literature	.
	eResources addresses	
Example issues/ example questions/ tasks being completed	Vehicle communication buses. Sensors and controllers used in vehicles. Power steering systems. Passive vehicle safety systems. Modern vehicle lighting systems.	
Practical activites within the subject	Not applicable	

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