GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056116		
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 Energy -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Zbigniew Kneba	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	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

Acquainting students with modern car propulsion systems with an internal combustion engine Acquainting students with contemporary car propulsion systems with an internal combustion engine

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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 curse	Analyzes the solutions of drive systems in terms of efficiency and environmental nuisance.	[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)	Designs by selecting elements from catalogs.	[SU4] Assessment of ability to use methods and tools
[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	He knows the structure and tasks of the car's propulsion sources	[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	Selects accessories for combustion and electric engines	[SW1] Assessment of factual knowledge

Subject contents

Construction of internal combustion engines. Fuel, air and ignition systems. Alternative fuel engines. Characteristics of internal combustion engines - cooperation with an energy receiver. Characteristics of engines and generators. Structures hybrid drive systems. Electric batteries.

Prerequisites and co-requisites

Thermodynamics. Electrotechnics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
writen test	50.0%	100.0%

Recommended reading

Basic literature	Guzella L.: Vehicle propulsion systems Springer
Supplementary literature	Zou Y.: Modeling and Control of Hybrid Propulsion System for Ground Vehicles Springer

	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Draw the structure of the serial drive train of a passenger car.Replace the main control variables of the accumulative diesel fuel injection system.	
Work placement	Not applicable	

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