GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Vehicle Safety and Diagnostics Systems, PG_00055518						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2025		Academic year of realisation of subject	2027/2028			
Education level	first-cycle studies		Subject group	Optional 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	3		Language of instruction	Polish			
Semester of study	6		ECTS credits	3.0			
Learning profile	general academic profile		Assessment form	assessment			
Conducting unit	Department Of Machine Design And Vehicles -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Sławomir Sommer				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	15.0	0.0	0.0	45
	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	45		3.0		27.0	75
Subject objectives	Acquainted with the principles of designing safe cars. Translating these principles into concrete design solutions vehicles and their respective teams. Acquainting with the basic issues related to car diagnostics.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W08] possesses knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student has knowledge of such issues as: Active and passive safety. Principles of constructing safe vehicles. Chassis, chassis, braking systems, lighting, tires, seat belts, airbags, fire extinguishing systems. ABS, ASR and ESP systems. Air conditioning and satellite navigation. Reversing sensors and car radar. Research of vehicles and their assemblies. The impact of the road and road traffic organization. Safe operation of vehicles. Child safety in vehicles. The student has basic knowledge of vehicle diagnostics.	[SW1] Assessment of factual knowledge
[K6_U11] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	The student has knowledge of such issues as: Active and passive safety. Principles of constructing safe vehicles. Chassis, chassis, braking systems, lighting, tires, seat belts, airbags, fire extinguishing systems. ABS, ASR and ESP systems. Air conditioning and satellite navigation. Reversing sensors and car radar. Research of vehicles and their assemblies. The impact of the road and road traffic organization. Safe operation of vehicles. Child safety in vehicles. Has knowledge of diagnostics of: engine, braking system, chassis, steering, electrical equipment, body and diagnostic lines. The student is able to diagnose basic vehicle components automotive.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Lecture:

Active and passive safety. Principles of construction of safe vehicles. Bodys, chassises, bracking systems, lights, tyres, safety belts, air bags, fire protection systems. ABS, ASR and ESP systems. Air conditioning and GPS. Backing sensors and car radar. Vehicle and it"s units researches. Road and traffic organization influence. Safe maintenance of vehicle. Children safety in vehicles. Diagnostics of: engine, brake system, chassis, steering system, electrical equipment, body, diagnostic lines.

Laboratory:

Measurement of braking forces on a plate stand. Car suspension geometry measurement. Backlash testing steering system. Measurement of engine compression pressure. Combustion chambers tightness measurement The analysis of diagnostic information in the passenger car OBD system.

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Midterm colloquium	50.0%	100.0%

Recommended reading	Basic literature	1. Wicher J.: Bezpieczeństwo samochodów i ruchu drogowego. WKiŁ, Warszawa, 2004. 2. Afanasjew L. L., Djakow A. B., Ilarionow W. A.: Czynne bezpieczeństwo samochodu. WKiŁ, Warszawa, 1986. 3. Iwanow W. N., Lalin W. A.: Bierne bezpieczeństwo samochodu. WKił, Warszawa, 1984. 4. Technika Motoryzacyjna - miesięczniki. 5. Auto-Technika Motoryzacyjna - miesięczniki. 6. Auto-International - miesięczniki. 7. Auto- Świat - tygodniki. 8. Materiały reklamowe firm: BMW, Mercedes-Benz, Renault, Opel, Bosch. 9. Hebda M., Niziński S., Pelc H.: Podstawy diagnostyki pojazdów mechanicznych. WKŁ. Warszawa. 1980. 10. Trzeciak K.: Diagnostyka samochodów osobowych. WKŁ.Warszawa. 1998. 11. Merkisz J., Marurek St.: Pokładowe systemy diagnostyczne pojazdów samochodowych. WKŁ. Warszawa. 2004 12. Niziński S.: Diagnostykasamochodów osobowych i ciężarowych.Dom Wydawniczy BELLONA, Warszawa. 1999.
	Supplementary literature	1. Reimpel J.: Budowa samochodów Podstawy Konstrukcji, WKŁ,warszawa, 1997.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	-	
Work placement	Not applicable	

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