



Subject card

Subject name and code	Vehicle safety, PG_00040104						
Field of study	Mechatronics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
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	Division of Mechanical Vehicles and Military Technology -> 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	dr hab. inż. Piotr Mioduszewski					
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	5.0		30.0		65
Subject objectives	Providing basic knowledge about the most common causes of road accidents, the processes occurring during an accident, ways to prevent or minimize the effects of accidents and disasters and methods of accident reconstruction, as well as about active and passive safety systems used in motor vehicles.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	The student identifies factors influencing the occurrence and course of road accidents, explains the principles of vehicle motion mechanics and collision mechanics.			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	[K6_U05] is able to use properly chosen tools to compare design solutions of elements and mechatronics systems according to given application and economic criterions (e.g. power demand, speed, costs)	The student explains the basic issues of accident reconstruction and performs a space-time analysis of an accident.			[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		
	[K6_W10] has a basic knowledge about development trends in terms of engineering and technical sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering, adequate for Mechatronics course	The student is able to describe the structure and principle of operation of modern active and passive safety systems used in motor vehicles.			[SW1] Assessment of factual knowledge		
	[K6_W08] knows and understands design and production processes of elements and simple mechatronic devices	The student is able to perform a computer reconstruction of a road accident.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
Subject contents	Legal and medico-judicial issues of accidents. Forensic aspects of road accident scene investigation. Post-accident vehicle inspections. Modern active and passive safety systems in motor vehicles. Selected issues of accident reconstruction: driver reaction process, time-space analysis of accident, deformation and energy absorption of vehicle bodies. Reconstruction methods of typical types of accidents: involving cars, involving two-wheeled vehicles, involving pedestrians, simulated accidents. Computer-aided accident reconstruction.						
Prerequisites and co-requisites	Knowledge of the principles of kinematics and dynamics of vehicle movement. Knowledge of motion mechanics and collision mechanics. Basic knowledge of the structure and principles of operation of individual vehicle systems and assemblies						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Accident reconstruction task	100.0%	0.0%
	Test	50.0%	100.0%
Recommended reading	Basic literature	Podstawy rekonstrukcji wypadków drogowych. L. Prochowski, J. Unarski, W. Wach, J. Wicher. WKiŁ, Warszawa 2008	
	Supplementary literature	Wypadki drogowe. Vademecum biegłego sądowego. Praca zespołowa pod redakcją J. Wierciński i A. Reza. Wydawnictwo Instytutu Ekspertyz Sądowych im. Prof. dra Jana Sehna w Krakowie, Kraków 2002	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>Factors influencing the occurrence and course of road accidents. The course of a road accident. Criminal aspects of investigating the accident scene, post-accident vehicle inspections. The driver's reaction process. Spatio-temporal analysis of an accident. Deformation and energy absorption of vehicle bodies. Methods of reconstructing typical types of accidents. Construction and principle of operation of modern active and passive safety systems used in motor vehicles.</p>		
Work placement	Not applicable		

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