



Subject card

Subject name and code	ELECTROMOBILITY, PG_00036790						
Field of study	Electrical Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group					
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	Department of Electrical Engineering of Transport -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Leszek Jarzębowicz					
	Teachers	dr hab. inż. Leszek Jarzębowicz dr inż. Aleksander Jakubowski					
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		15.0		50
Subject objectives	Gaining knowledge regarding electromobility.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K7_W02	The student knows the difference between the energy consumption of vehicle movement and the total energy consumption and knows the methodology for determining them.			[SW1] Assessment of factual knowledge		
	K7_W01	The student is able to develop and use an algorithm for numerical integration of vehicle power or speed.			[SW3] Assessment of knowledge contained in written work and projects		
	K7_U02	The student is able to answer questions about the current laboratory exercise.			[SU2] Assessment of ability to analyse information		
	K7_U03	The student finds sources of information regarding selected aspects of laboratory exercises and uses them to interpret the results.			[SU1] Assessment of task fulfilment		
Subject contents	Traction electric drives. Energy consumption of electric vehicles. Hybrid electric cars. Electric cars charging. Electromechanical equipment of electric and hybrid motor vehicles. Electric energy storage devices. Construction and diagnostics of ignition and injection systems. Ecological aspects of automotive development. Vehicle traction control systems.						
Prerequisites and co-requisites	Accomplished course of "Electrical engineering in Transport".						
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Lecture part test	50.0%			60.0%		
	Reports and discussion	50.0%			40.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Ehsani M., Gao Y., Longo S., Ebrahimi K.: Modern Electric, Hybrid Electric, and Fuel Cell Vehicles. 3rd Edition. CRC Press, 2018 2. Hayes J.G., Goodarzi G.A.: Electric Powertrain. Energy Systems, Power Electronics and Drives for Hybrid, Electric and Fuel Cell Vehicles. Wiley 2018. 3. Pistoia G., Liaw B.: Behaviour of Lithium-Ion Batteries in Electric Vehicles: Battery Health, Performance, Safety, and Cost. Springer 2018. 4. Găiceanu M.: Self-Driving Vehicles and Enabling Technologies. IntechOpen 2021.
	Supplementary literature	Karwowski K. (red.): Energetyka transportu zelektryfikowanego. Zbiór zadań problemowych. Wyd. PG, 2023.
	eResources addresses	Adresy na platformie eNauczanie: Elektromobilność [2023/24] - Moodle ID: 27899 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27899
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • List the communication standards that are suitable for controlling vehicle's drivetrain. • Discuss the motivation behind introducing constant-power operating region in vehicles. 	
Work placement	Not applicable	