GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electromobility II, PG_00058675		
Field of study	Hydrogen Technologies and Electromobility		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study 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	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Electrified Transportation -> Faculty Of Electrical And Control Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Leszek Jarzębowicz	
	Teachers	dr hab. inż. Andrzej Wilk 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	15.0	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	6.0	24.0	75

Subject objectives

Gaining knowledge about issues related to electromobility.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W10] knows the basics of the processing, use and rational use of electricity, including the principles of electric traction in various transport systems	The student knows the main factors affecting the energy consumption of electric vehicles.	[SW1] Assessment of factual knowledge
[K6_U12] can formulate a specification of simple engineering tasks of a practical nature related to the field of study	Student potrafi wyspecyfikować parametry potrzebne do analizy dynamiki ruchu pojazdu elektrycznego.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W16] He has basic knowledge of the current state and the latest development trends related to the field of study.	The student knows the presently used present technologies and development trends in electromobility.	[SW1] Assessment of factual knowledge
[K6_W15] he has knowledge of the construction, principles of operation and operation of electromagnetic energy converters used in transport systems and systems.	The student knows the types and features of electric drive systems used in electromobility.	[SW1] Assessment of factual knowledge
[K6_K02] can work in a group taking on different roles in it	The student is able to cooperate with other members of the laboratory group.	[SK2] Assessment of progress of work

Subject contents

Vehicle electric drive systems. Active safety systems. Energy consumption of electric vehicles. Vehicle energy storages. Electric and hybrid-electric cars. Autonomously driven vehicles. Vehicle charging systems and standards. Vehicle and infrastructure IT networks.

Prerequisites and co-requisites

Basic knowledge of physics, electrical machines, power electronics, electric drives, electrical engineering in transportation. Ability to solve simple electrical circuits.

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Raports and preparation for laboratory</td><td>60.0%</td><td>30.0%</td></tr>
<tr><td>Test on the lecture part</td><td>60.0%</td><td>70.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Ehsani M., Gao Y., Longo S., Ebrahimi K.: Modern Electric, Hybrid Electric, and Fuel Cell Vehicles. 3rd Edition. CRC Press, 2018

Hayes J.G., Goodarzi G.A.: Electric Powertrain. Energy Systems, Power Electronics and Drives for Hybrid, Electric and Fuel Cell Vehicles. Wiley 2018.

Pistoia G., Liaw B.: Behaviour of Lithium-Ion Batteries in Electric Vehicles: Battery Health, Performance, Safety, and Cost. Springer 2018.

Găiceanu M. (red.): Self-Driving Vehicles and Enabling Technologies. IntechOpen 2021</td></tr>
<tr><td>Supplementary literature</td><td>Karwowski K. (red.): Energetyka transportu zelektryfikowanego. Zbiór zadań problemowych. Wyd. PG, 2023.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Elektromobilność II (TWiE, sem. V 2024/25) - Moodle ID: 41288
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=41288</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">Discuss the types and construction of hybrid combustion-electric cars.

List the electric car charging standards used around the world and present their basic features.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.