POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Hybrid vehicles

Course

Field of study	Year/Semester
Electrical engineering	2/4
Area of study (specialization)	Profile of study
Electrical and computer systems in industry and vehicles	general academic
Level of study	Course offered in
Second-cycle studies	polish
Form of study	Requirements
part-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
Tutorials	Projects/seminars	
	10	

Number of credit points

1

Lecturers

Responsible for the course/lecturer:	Responsible for the course/lecturer:
D.Sc. Leszek Kasprzyk	

Prerequisites

Basic knowledge of the basics of electrical engineering, electrical machines and storage of electricity. Ability to interpret transmitted messages and effective education in the field related to electric and hybrid vehicles.

Course objective

To familiarize students with popular groups and solutions of electric and hybrid vehicles. Presentation of the latest trends in the field of automotive. Discussion of currently used electricity storage in motor vehicles.

Course-related learning outcomes

Knowledge

Has structured knowledge of the propulsion systems used in electric and hybrid vehicles, taking into account their impact on the environmentHas knowledge about the energy consumption of motor vehicles, the application of identification principles, the use of software to analyze the results of computer simulationsHas knowledge of the design of simple drive systems

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Skills

Has structured knowledge of the propulsion systems used in electric and hybrid vehicles, taking into account their impact on the environmentHas knowledge about the energy consumption of motor vehicles, the application of identification principles, the use of software to analyze the results of computer simulationsHas knowledge of the design of simple drive systems

Social competences

Is aware of the growing energy problem in the world.Understand various aspects and effects of electrical engineer activities, including environmental impact

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Students are assessed on the basis of their activity during classes and implementation of an individual project.

Programme content

History of motor vehicles, current statistical data on transport and automotive in the world. Electromobility in Poland and in the world. Methods to improve the harmfulness of motor vehicles. Technical parameters of electric and hybrid vehicles. Classification and operation principle of propulsion systems in hybrid vehicles. Determining the demand for power and energy of a motor vehicle. Selection and analysis of energy storage behavior in a motor vehicle. Charging systems for energy storage in electric and plugin hybrid vehicles. Economic analysis of the profitability of using electric and hybrid vehicles. Methods and modeling of energy storage.

Teaching methods

Multimedia presentation, illustrated with examples on the board, initiating discussions during the lecture. Additional materials are placed in the Moodle system.

Bibliography

Basic

1. Herner A., Riehl H. J.: Elektrotechnika i elektronika w pojazdach samochodowych, WKiŁ, Warszawa 2003.

2. Praca zbiorowa: Mikroelektronika w pojazdach. Informator techniczny BOSCH, WKiŁ, Warszawa 2002.

3. Jastrzębska G.: Odnawialne źródła energii i pojazdy proekologiczne, WNT, Warszawa 2009.

Additional

1. Denton T.: Automobile electrical and electronic systems, Arnold, London 2000.

2. Larminie J., Lowry J.: Electric vehicle technology. Explained, Wiley, West Sussex 2003

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Breakdown of average student's workload

	Hours	ECTS
Total workload	35	1,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for classes/tutorials, project preparation)[1]	20	1,0

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[1] delete or add other activities as appropriate