COURSE DESCRIPTION CARD - SYLLABUS

Course name
Diagnostics of alternative drives [N2MiBP1-HSN>DNA]

Course

Field of study
Mechanical and Automotive Engineering

Year/Semester
1/1

Area of study (specialization)
Hybrid Powertrain Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
9

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

dr hab. inż. Wojciech Cieślik
wojciech.cieslik@put.poznan.pl

Lecturers

Prerequisites

SKILLS: the student is able to integrate the obtained information, interpret it, draw conclusions, formulate and justify opinions SOCIAL COMPETENCES: the student is aware of the non-technical aspects and effects of the operation of internal combustion engines and their impact on the natural environment

Course objective

Providing basic information on the construction, design and operation of internal combustion engines, taking into account the latest solutions.

Course-related learning outcomes

Knowledge:
He knows the modern engineering methods of computer graphics and the theoretical basis of engineering calculations using the finite element method.
Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment.
Has a general knowledge of the types of research and methods of testing working machines with the use of modern measurement techniques and data acquisition.

He knows the main development trends in the field of mechanical engineering.

Skills:
Can write user manual and safety manual for designed work machine or vehicle.
He can design the technology of exploitation of a selected machine with a high degree of complexity.
Can communicate on specialist topics with a diverse audience.

Social competences:
He is ready to critically assess his knowledge and received content.
Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on its own.
It is ready to initiate actions for the public interest.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Lecture - discussion during the lectures, with the use of illustrative materials, on topics related to the diagnostics of alternative drives. The course ends with a written test.

Programme content

Diagnostic systems for hybrid and electric vehicles. Autonomy of alternative vehicles. Safety of HV and EV vehicles. Diagnostics of batteries used in alternative vehicles. EV charging network infrastructure.

Course topics

none

Teaching methods

1. Lecture in the form of presentation and problem tasks to be solved in a group.

Bibliography

Basic
1. Merkisz J., Pielecha I., Układy mechaniczne pojazdów hybrydowych. Wydawnictwo Politechniki Poznańskiej. Poznań 2015
2. Merkisz J., Pielecha I., Układy elektryczne pojazdów hybrydowych. Wydawnictwo Politechniki Poznańskiej. Poznań 2015
3. Merkisz J., Pielecha I.: Alternatywne napędy pojazdów. Wydawnictwo Politechniki Poznańkiej. Poznań 2006
4. Torsten Schmidt Pojazdy hybrydowe i elektryczne w praktyce warsztatowej. WKŁ 2020
Additional
1. Artykuły naukowe w zakresie tematyki: SAE, MTZ
2. Publikacje w czasopiśmie Combustion Engines

Breakdown of average student's workload

	Hours	ECTS
Total workload	15	1,00
Classes requiring direct contact with the teacher	9	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	6	0,50