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

Methods of Inferences in Vehicle Diagnostics

Course

Field of study	Year/Semester
Mechanical and Automotive Engineering	1/1
Area of study (specialization)	Profile of study
Rail vehicles	general academic
Level of study	Course offered in
Second-cycle studies	polish
Form of study	Requirements
part-time	elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
9	0	0
Tutorials	Projects/seminars	
0	9	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

prof. dr hab. inż. Franciszek Tomaszewski

email: franciszek.tomaszewski@put.poznan.pl

tel. 61-665 2570

Wydział Inżynierii Lądowej i Transportu

Responsible for the course/lecturer:

Prerequisites

KNOWLEDGE: Basic knowledge of physics, mechanics and vehicle construction.

SKILLS: Solve problems appearing in technical systems.

SOCIAL COMPETENCES: Collaboration in a group and setting priorities in solving the tasks set before him.

Course objective

Getting to know theoretical and practical issues related to the methods and diagnostic inference in vehicles.

Course-related learning outcomes

Knowledge

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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.

Has extended knowledge of the standards for working machines in the field of methods of calculating and testing machines, safety, including road safety, environmental protection as well as mechanical and electrical interface.

Has extended knowledge of the life cycle of machines, the principles of operation of working machines and destructive processes occurring during operation, such as tribological wear, corrosion, surface fatigue and volumetric aging of the material.

Skills

Can plan and carry out experimental research of specific processes taking place in machines and routine tests of a working machine or a vehicle from a selected group of machines.

Is able to carry out basic measurements of mechanical quantities on the tested working machine with the use of modern measuring systems.

He can design the technology of exploitation of a selected machine with a high degree of complexity.

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 fulfill social obligations, inspire and organize activities for the benefit of the social environment.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam, final test

Programme content

Introduction to problems of the theory of diagnostics. Diagnostic models of technical objects: symptomatic, analytical, holistic and simulation. Forecasting future vehicle conditions with known and unknown symptom trend model. Vehicle diagnosis methods and algorithms.

Diagnostic inference. Generation of diagnostic signals, acquisition and processing of diagnostic information. Limit values and admissible diagnostic symptoms. Methodology of building diagnostic procedures. Diagnostic experiments.

Teaching methods

Lecture with multimedia presentation.

Bibliography

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Basic

1. Niziński S.: Diagnostyka samochodów osobowych i ciężarowych. Dom Wydawniczy Bellona, Warszawa 1999.

2. Niziński S., Michalski R.: Diagnostyka obiektów technicznych. Wydawnictwo i Zakład Poligrafii Instytutu Eksploatacji w Radomiu, Radom 2002.

3. Żółtowski B.: Podstawy diagnostyki Maszyn. Wydawnictwo Uczelniane Akademii Techniczno-Rolniczej w Bydgoszczy, Bydgoszcz 1996.

Additional

1. Korbisz J., Kościelny J., Kowalczuk Z., Cholewa W., redakcja. Diagnostyka procesów. Modele, metody sztucznej inteligencji, zastosowania. Wydawnictwa Nukowo-Techniczne, Warszawa 2004

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	2,0
Classes requiring direct contact with the teacher	18	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	12	1,0

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[1] delete or add other activities as appropriate