COURSE DESCRIPTION CARD - SYLLABUS

Course name

Durability and reliability of vehicles

Course

Field of study

Construction and Exploitation of Means of Transport

Year/Semester

2/3

Area of study (specialization)

Motor Vehicles

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Lądowej i Transportu

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Responsible for the course/lecturer:

Prerequisites

The student has a basic knowledge of the construction of cars and the principles of operation of their components as well as the basics of reliability.

The student is able to analyze and synthesize information, draw conclusions, formulate and justify opinions.

Course objective

Developing the ability to formulate and solve problems related to the reliability of vehicles at the stage of their design, manufacture and operation.

Course-related learning outcomes

Knowledge

knows the terminology in the field of reliability

distinguishes between forms of destroying elements of motor vehicles

understands vehicle reliability models

has practical knowledge about the weak links of currently produced motor vehicles

knows the methods of research planning allowing for the development of reliability at the design stage

Skills

can identify the causes of the vehicle's functional failure and estimate the risks resulting from its occurrence

correctly models the reliability of vehicle components

correctly interprets operational data and can use them to identify the weak links of the vehicle

Social competences

responsibly assesses threats to the safety of people and the environment resulting from the vehicle's unfitness

is able to communicate communicatively about the issues of durability and reliability of the vehicle

is open to the acquisition of new knowledge in the field of vehicle reliability

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Project in the field of vehicle reliability modeling. Final test

Programme content

Reliability terminology. Airworthiness and unfitness condition, damage. Service life until failure and between failures. Limit state, durability. State assessment criteria.

Reliability in models used in the design of motor vehicles. Planning of research allowing for the development of reliability at the design stage

Reliability and technological quality. The dispersion of the properties of the manufactured elements.

Influence of operating conditions on the reliability of vehicles. Influence of servicing strategy on vehicle reliability. Forms of destroying elements of motor vehicles. Typical courses of changes in technical condition. Statistical description of changes in technical condition. Analysis of operational data about mileage to failure and between failures. Analysis of the types, causes and effects of the vehicle functional failure and estimation of the risks resulting from its occurrence.

Empirical characteristics and models of vehicle reliability. Analysis of durability and reliability of selected vehicles. Identification of weak links in currently manufactured motor vehicles.

Teaching methods

Informative and problematic lecture with a multimedia presentation. Exercises with didactic discussion.

Bibliography

Basic

1. Hebda M.: Eksploatacja samochodów. Wydawnictwo Instytutu Technologii Eksploatacji, Radom 2005

2. Gronowicz J.: Eksploatacja techniczna I utrzymanie samochodów. Wydawnictwo Uczelniane Politechniki Szczecińskiej, Szczecin 1997

3. Smalko Z.: Podstawy eksploatacji technicznej pojazdów. Warszawa, Wydawnictwo Politechniki Warszawskiej, 1987

4. Niziński S.:Diagnostyka samochodów osobowych i ciężarowych, Dom wydawniczy Bellona, Warszawa 1999r

5. Klyatis Lev M.: Accelerated reliability and durability testing technology

Additional

1. Moubray J.: Reliability centered maintenance, Industrial Press Inc, 2000

2. Kumar U.D., Crocer J.,Knezewic J.,El-Haram M.: Reliability, Maintenance and Logistic Support, Kluwert Academic Publishers, 2000

3. O?Connor P.D.T., Newton D., Bromley R.: Practical Reliabillity Engineering, Jonn Willey and Sons, LTD, 2001

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	20	1

[1] delete or add other activities as appropriate