COURSE DESCRIPTION CARD - SYLLABUS

Course name
The theory of road traffic [N1MiBP1>TRPD]

Course

Field of study
Mechanical and Automotive Engineering

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
9

Laboratory classes
9

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr hab. inż. Wojciech Sawczuk prof. PP
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Lecturers

Prerequisites

KNOWLEDGE: The student has a basic knowledge of machine science, mechanics, the basics of machine construction and the laws of physics related to road vehicles. SKILLS: The student is able to acquire knowledge (information), interpret them, draw conclusions, read diagrams and technical drawings. SOCIAL COMPETENCES: The student is aware of the role of means of transport in human economic activity. The student is able to determine the priorities important in solving the tasks set before him.

Course objective

The aim of the course is to provide students with information on the movement of motor vehicles, its properties and the characteristics of drive units.

Course-related learning outcomes

Knowledge:
Has knowledge in the field of mathematics, including algebra, analysis, theory of differential equations, probability, analytical geometry necessary to: describe the operation of discrete mechanical systems, understand computer graphics methods, describe the operation of electrical and mechatronic systems.
Has knowledge in the field of physics, including the basics of classical mechanics, optics, electricity and

magnetism, solid state physics, quantum and nuclear physics, necessary to understand specialist lectures in the field of the theory of construction materials and materials science, theory of machines and mechanisms, theory of electric drives and mechatronic systems.
Has basic knowledge of the basics of machine design and the theory of machines and mechanisms, including mechanical vibrations.

Skills:
Can obtain information from literature, the Internet, databases and other sources. Can integrate the obtained information, interpret and draw conclusions from it, and create and justify opinions.
Can properly use modern equipment for measuring major physical quantities, used in machine research and production control.
Can use learned mathematical theories to create and analyze simple mathematical models of machines and their elements, and simple technical systems.

Social competences:
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.
Is ready to fulfill professional roles responsibly, including:
- observing the rules of professional ethics and requiring this from others,
- caring for the achievements and traditions of the profession.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
For discussion, ongoing preparation and activity in class. Written credit for lectures and written credit for laboratory classes.

Programme content

Course contents Rolling wheels on the surface, wheel slip, forces acting on the vehicle, resistance during driving a car, characteristics of drive units, engine and vehicle finish, energy balance of the vehicle, gear ratios in the drive system, characteristics of mechanical, hydraulic and electric drives, supply characteristics at constant and variable engine speed, vibrations in the vehicle, equation of vehicle motion.

Course topics

none

Teaching methods

1. Lecture with multimedia presentation,
2. Laboratory - problem solving.

Bibliography

Basic
1. Siłka W.: Teoria ruchu samochodu. Wydawnictwo Naukowo-Techniczne Warszwa 2002 r.
2. Mitschke M.: Teoria samochodu. Dynamika samochodu. WKŁ Warszawa 1977 r.
3. Prochowski L.: Pojazdy samochodowe. Mechanika ruchu. WKŁ Warszawa 2005 r.
Additional
1. Arczyński S.: Mechanika ruchu samochodu. Wydawnictwo naukowo-Techniczne, Warszawa 1993 r.
2. Gaca S., Suchorzewski W., Tracz M.: Inżynieria ruchu drogowego. Teoria i praktyka. WKŁ Warszawa 2014 r.
3. Wicher J.: Bezpieczeństwo samochodów i ruchu drogowego. WKŁ Warszawa 2012 r.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	18	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	32	1,00