



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Road vehicles

### Course

Field of study

Year/Semester

Transport

3/5

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

15

0

Tutorials

Projects/seminars

0

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

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Faculty of Civil and Transport Engineering

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### Prerequisites

The student has a basic knowledge of machine science, mechanics, the basics of machine construction and the laws of physics.

The student is able to integrate the obtained information, interpret it, draw conclusions, read diagrams and technical drawings.

The student is aware of the role of means of transport in human economic activity.

### Course objective

Providing students with basic information on the varieties, construction and operation of the basic



systems, mechanisms and assemblies of a motor vehicle and their importance for the correct and safe functioning of the vehicle.

### Course-related learning outcomes

#### Knowledge

The student has an ordered, theoretically founded general knowledge of technology, transport systems and various means of transport

The student has ordered and theoretically founded general knowledge in the field of key issues of technology and detailed knowledge in the field of selected issues in this discipline of transport engineering

#### Skills

The student is able to make a critical analysis of the functioning of transport systems and other technical solutions and to evaluate these solutions, including: is able to effectively participate in the technical inspection and assess the transport task from the point of view of non-functional requirements, has the ability to systematically conduct functional tests

The student is able to design means of transport with appropriate external requirements (e.g. regarding environmental protection)

#### Social competences

The student understands that in technology, knowledge and skills very quickly become obsolete

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lecture is verified by a written exam.

Mandatory individual reports on laboratory activities. Final credit of laboratory classes.

### Programme content

Types and properties of vehicle drive systems.

Tasks, structure, principle of operation, design variants and properties of: main couplings, gear boxes, drive shafts, main gears, differentials, drive shafts, wheel hubs. Multi-axis drives, construction, properties.

Vehicle tires.

Types and properties of suspension systems. Tasks, structure, varieties, properties and scope of application of leading and elastic elements, shock absorbers and stabilizers.

Types and properties of steering systems. Conditions for the car's transverse and longitudinal stability. Tasks, structure, types and properties of steering mechanisms and steering linkages



Vehicle braking - the course of the process. Types and properties of braking systems. Tasks, structure, types and properties of brakes and brake actuation mechanisms.

Tasks, types, properties and fields of application of support structures. Construction of frame systems and self-supporting bodies.

### Teaching methods

Lecture with multimedia presentation.

Laboratory classes: independent performance of tasks given by the teacher - practical exercises.

### Bibliography

Basic

Prochowski L.: Mechanika ruchu. WKŁ, W-wa, 2005

Jackowski J., Łęgiewicz J., Wieczorek M.: Samochody osobowe i pochodne. WKŁ, W-wa, 2011

Prochowski L., Żuchowski A.: Samochody ciężarowe i autobusy. WKŁ, W-wa, 2004

Reimpell J., Betzler J.: Podwozia samochodów. Podstawy konstrukcji. WKŁ, W-wa, 2003

Zajac M.: Układy przeniesienia napędu samochodów ciężarowych i autobusów. WKŁ, W-wa, 2003

Gabryelewicz M.: Podwozia i nadwozia pojazdów samochodowych cz. 1/2. WKŁ, W-wa, 2018

Additional

Heising B., Ersoy M.: Chassis Handbook. Vieweg + Teubner Verlag, Wiesbaden, 2011

Meywerk M.: Vehicle dynamics. John Wiley & Sons Ltd, Chichester, 2015

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	3,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for laboratory classes, preparation for exam) <sup>1</sup>	30	1,5

<sup>1</sup> delete or add other activities as appropriate