



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Construction of road vehicles

### Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Mass Transport Vehicles

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

9

Laboratory classes

18

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

Ph.D., D.Sc. Wojciech Sawczuk

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Faculty of Civil and Transport Engineering

ul. Piotrowo 3, 60-965 Poznan

Responsible for the course/lecturer:

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### 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 construction and operation of systems, assemblies and mechanisms of a motor vehicle.

## 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:

For discussion, ongoing preparation and activity in class. Written exam for lectures and written exam for classes.

## Programme content



Varieties and properties of the suspension systems, tasks, structure, varieties, properties and scope of application of leading and spring elements, shock absorbers and stabilizers, varieties and properties of steering systems, conditions of transverse and longitudinal stability of the car, tasks, structure, varieties and properties of steering mechanisms and steering mechanisms, legal requirements for the construction and operation of brake systems, types and properties of brake systems, tasks, construction, types and properties of brakes and brake actuation mechanisms, auxiliary brakes, ABS, ASR, ESP systems: tasks, basics of construction and principles of operation, tasks, varieties, properties and areas of application of load-bearing systems, construction of frame systems and self-supporting bodies, legal requirements, types of lighting, types and properties of various light sources.

### Teaching methods

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

### Bibliography

#### Basic

1. Reimpell J., Betzler J.: Podwozia samochodów, Podstawy konstrukcji. WKŁ, W-wa, 2003.
2. Zieliński A.: Konstrukcja nadwozi samochodów osobowych i pochodnych. WKŁ, W-wa, 2003.
3. Prochowski L., Żuchowski A.: Samochody ciężarowe i autobusy. WKŁ, W-wa, 2004.

#### Additional

1. Seria Auto Expert: Budowa i eksploatacja pojazdów. Tom I, Działanie zespołów i podzespołów. Praca Zbiorowa, Vogel, Wrocław, 2004.
2. Czasopisma: Transport, technika motoryzacyjna oraz Auto, technika motoryzacyjna.
3. Orzełowski S.: Budowa podwozi i nadwozi samochodowych. WSiP, W-wa, 1999.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	27	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	73	2,0

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