



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Automotive body construction

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

			Number of
hours			
Lecture	Laboratory classes		Other (e.g. online)
15	0		0
Tutorials	Projects/seminars		
0	0		
Number of credit points			
1			

		Lecturers
Responsible for the course/lecturer:		Responsible for the course/lecturer:
dr inż. Hubert Pikosz		
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Faculty of Civil and Transport Engineering		
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Prerequisites

The student has 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 information on the construction of car bodies.



Course-related learning outcomes

Knowledge

Has a general knowledge of the principles and methods of constructing working machines, in particular the methods of functional and strength calculations, mathematical optimization of mechanical structures and modeling of machine structures in 3D systems.

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

He can correctly select the optimal material and its processing technology for typical parts of working machines, taking into account the latest achievements in material engineering.

He can estimate the cost of making a working machine or a vehicle with a high degree of complexity from a selected group of machines.

Can perform a medium complex design of a working machine or its assembly using modern CAD tools, including tools for spatial modeling of machines and calculations using the finite element method.

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.

Is willing to think and act in an entrepreneurial manner.

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.

Programme content

Basic definitions, meaning and functions of the body, classifications and divisions of bodies.

Structure and design solutions used in vehicle bodies.

Support structures. Support frames. Self-supporting structures. Construction of supporting structures for vehicle bodies.

Vehicle body components. Floor plates, body platforms.

The flexural and torsional stiffness of the car body.



Outer plating and covers. External fittings. Windows, sunroofs, wiper mechanisms.

Ergonomics in vehicle body construction.

Aerodynamics in automotive body construction.

Passive safety of the driver, vehicle passengers and pedestrians in body construction.

Truck, bus, semi-trailer and trailer bodies. Sports car bodies.

Teaching methods

Lecture with multimedia presentation.

Bibliography

Basic

Zieliński A.: Konstrukcja nadwozi samochodów osobowych I pochodnych, WKiŁ, 2008

Morello L., Rossini L. R., Pia G., Tonoli A.: The Automotive Body, Volume I: Components Design, Springer 2011

Morello L., Rossini L. R., Pia G., Tonoli A.: The Automotive Body, Volume II: System Design, Springer 2011

Additional

Piechna J.: Podstawy aerodynamiki pojazdów. Warszawa: WKŁ 2000.

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for exam) ¹	10	0,5

¹ delete or add other activities as appropriate