



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Industrial design in vehicle design

### Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Rail vehicles

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

polish

Requirements

elective

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

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Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

### Prerequisites

Knowledge: The student has basic knowledge in the field of construction of transport vehicles public, as well as the design of vehicles and their components

Skills: the student has the basic skills of finding and interpreting information on the selected topic can present the acquired knowledge.

Social competences: The student is able to cooperate in a group, assuming various roles in it. The student is able to determine the priorities important in solving the tasks set before him.



### Course objective

Acquisition of basic knowledge of user-based design by students, the exercise of design intuition and good practice broadening horizons.

### Course-related learning outcomes

#### Knowledge

Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment.

Has extended knowledge of modern construction materials such as carbon plastics, composites, ceramics, in terms of their construction, processing technology and applications.

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.

#### 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.

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.

He is able to independently plan and implement his own learning throughout life and direct others in this regard.

#### 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.

It is ready to initiate actions for the public interest.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Students in groups of two prepare Case study on integrated systems public transport, which are discussed in the activities.

### Programme content

What is design? What is good design? The role of a designer in the public transport vehicle market. Model design process - from tender to acceptance, from concept design to optimization. Overview of mass transport vehicles in terms of industrial design. Good and bad examples of integrated transport systems.

### Teaching methods



Conversation lecture

### Bibliography

Basic

Tim Brown: Zmiana przez design: jak design thinking zmienia organizacje i pobudza innowacyjność,

Wrocław 2013, ISBN 978-83-64275-01-2.

Additional

Olga Gitkiewicz: NIE ZDAŻĘ, Warszawa 2019, ISBN 978-83-65970-39-8

### 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 laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	10	0,5

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