



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Recycling of Means of Transport

### Course

Field of study

Year/Semester

Transport

4/7

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

part-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

9

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

prof. dr hab. Agnieszka Merkisz-Guranowska

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### Prerequisites

Student has a basic knowledge of the construction of means of transport.

Student is able to associate and integrate obtained information, analyze the phenomena occurring in the environment, draw conclusions, formulate and justify opinions.

Student is aware of the social and economic importance of environmental protection and closed-loop economy.



### Course objective

Knowledge about the issue of recycling means of transport, taking into account legal, technical, economic and social aspects in the context of sustainable development.

### Course-related learning outcomes

#### Knowledge

Has ordered, theoretically founded general knowledge in the field of technology, transport systems and various means of transport

He knows the basic techniques, methods and tools used in the process of solving tasks in the field of transport, mainly of an engineering nature

Has knowledge of ethical codes regarding transport engineering, is aware of the threats related to environmental protection and understands the specificity of mission-critical systems

#### Skills

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

#### Social competences

The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life

Is aware of the social role of a technical university graduate, in particular understands the need to formulate and convey to the society, in an appropriate form, information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the profession of a transport engineer

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Discussion and active participations in lectures.

Written test in the form of a multiple-choice test with possible additional open questions.

### Programme content

1 Basic concepts related to recycling: negative environmental impacts of means of transport, with particular emphasis on the end-of-life stage. The role and scope of waste treatment. Waste management and types of recovery/recycling.

2 Types of recycling: the scope of product and material recycling.

3 Recycling system: recycling process. Types of recycling networks with the specification of material flows.



4 Participants in the end-of-life recycling network: dismantlers (organization, equipment, legal requirements), vehicle collection points (legal requirements and equipment), shredders (shredding process, legal requirements)

5 Organization of end-of-life vehicles recycling network in selected countries.

6 Activities of car manufacturers in the field of recycling (eco-design, organization of the recycling network).

7 Organization of recycling of rail vehicles.

### Teaching methods

Lecture with multimedia presentation

### Bibliography

Basic

Merkisz-Guranowska A., Recykling samochodów w Polsce, Instytut Technologii Eksploatacji, Radom 2007

Additional

Merkisz-Guranowska A., Stawecka H., Recykling pojazdów szynowych, Instytut Pojazdów Szynowych Tabor, Poznań 2018

### Breakdown of average student's workload

	Hours	ECTS
Total workload	19	1,0
Classes requiring direct contact with the teacher	9	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