STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Recycling of transport means		**1010631371010612411**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**(brak)**	**4 / 7**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Engineering of Pipeline Transport	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours				No. of credits
Lecture: **1**	Classes: **-**	Laboratory: **-**	Project/seminars: **-**	**1**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**1 100%**
Technical sciences	**1 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has a basic knowledge of design and construction of transport means
2	**Skills**	Student is able to associate and integrate the information, draw conclusions, formulate and justify opinions
3	**Social competencies**	Student is able to do a literature research and knows the rules of discussion

Assumptions and objectives of the course:

Understanding the recycling issues including legal, technical, economic and social context of sustainable socio-economic development.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has the knowledge of basic concepts of recovery and recycling - [K1A_W21]
2. Has the knowledge of the recycling network specificity on the example of end-of-life vehicles recycling network - [K1A_W24]
3. Has the knowledge of basic technologies used in recovery and recycling of technical objects - [K1A_W21]
4. Has the knowledge of the factors affecting the efficiency of the recycling process - [K1A_W24]

Skills:

1. Is able to describe the negative effects of inadequate treatment of means of transport - [K1A_U01]
2. Is able to analyze the process of recycling - [K1A_U01]
3. Is able to identify the right way of recovery and recycling depending on the type of mean of transport and its components - [K1A_U08]

Social competencies:

1. Is aware of the risks associated with the inadequate treatment of technical objects and understands the need for adequate recovery - [K1A_K02]
2. Is able to develop his knowledge in the field of waste recovery - [K1A_K01]
3. Is able to formulate opinions on treatment of end-of-life products - [K1A_K06]

Assessment methods of study outcomes
Written final test.

Course description
1 Scope of recycling. Negative environmental impact of means of transport with emphasize to the end-of-life phase. Role and objectives of waste management and recovery. Types of recovery. 2 Types of recycling. Scope of product and material recycling. 3 Recycling system. Typical process of recovery including material flows. Types of recycling network. 4 Economic operators of recycling network: dismantlers (organisation, equipement, legal requirements), collecting points (legal requirements and equipement), shredders (shredding process). 5 Organisation of recycling network for end-of-life vehicles in selected countries. 6 Role of the manufacturers: eco-design, involvement in recycling network organization. 7 Organization of recycling network for rail vehicles. 8 Organization of recycling network for aircrafts.

Basic bibliography:

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

Additional bibliography:

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

Result of average student's workload

Activity	**Time (working hours)**
1. Participation in lectures	15
2. Preparation for the final test	10

Student's workload

Source of workload	**hours**	**ECTS**
Total workload	25	1
Contact hours	15	1
Practical activities	0	0