

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Recycling of transport means		Code 1010634371010612411
Field of study Transport	Profile of study (general academic, practical) general academic	Year /Semester 4 / 7
Elective path/specialty Engineering of Pipeline Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 9 Classes: - Laboratory: - Project/seminars: -		No. of credits 1
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 1 100% 1 100%
Responsible for subject / lecturer: prof. dr hab. Agnieszka Merkisz-Guranowska email: agnieszka.merkisz-guranowska@put.poznan.pl tel. 61 647 59 58 Wydział Inżynierii Transportu ul. Piotrowo 3 60-965 Poznań		
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 - [T1A_W06]		
2. Has the knowledge of the recycling network specificity on the example of end-of-life vehicles recycling network - [T1A_W06]		
3. Has the knowledge of basic technologies used in recovery and recycling of technical objects - [T1A_W06]		
4. Has the knowledge of the factors affecting the efficiency of the recycling process - [T1A_W06]		
Skills:		
1. Is able to describe the negative effects of inadequate treatment of means of transport - [T1A_U05]		
2. Is able to analyze the process of recycling - [T1A_U09]		
3. Is able to identify the right way of recovery and recycling depending on the type of mean of transport and its components - [T1A_U04]		
4. Is able to develop his knowledge in the field of waste recovery - [T1A_U19]		
Social competencies:		
1. Is aware of the risks associated with the inadequate treatment of technical objects and understands the need for adequate recovery - [T1A_K02]		
2. Is able to formulate opinions on treatment of end-of-life products - [T1A_K03]		

Assessment methods of study outcomes		
Written final test.		
Course description		
<p>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.</p> <p>2 Types of recycling. Scope of product and material recycling.</p> <p>3 Recycling system. Typical process of recovery including material flows. Types of recycling network.</p> <p>4 Economic operators of recycling network: dismantlers (organisation, equipment, legal requirements), collecting points (legal requirements and equipment), shredders (shredding process).</p> <p>5 Organisation of recycling network for end-of-life vehicles in selected countries.</p> <p>6 Role of the manufacturers: eco-design, involvement in recycling network organization.</p> <p>7 Organization of recycling network for rail vehicles.</p> <p>8 Organization of recycling network for aircrafts.</p>		
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