COURSE DESCRIPTION CARD - SYLLABUS

Course name
Impact of transport on the environment [S1MiTPM1>WTnŚ]

Course

Field of study
Materials and technologies for automotive industry

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

dr hab. inż. Aneta Bartkowska prof. PP
aneta.bartkowska@put.poznan.pl

Lecturers

Prerequisites

Knowledge: basics of chemistry, physics and science of materials. Skills: the ability to think logically, use of information obtained from libraries and the Internet. Social competencies: understanding the need to learn and acquire new knowledge.

Course objective

Understanding the impact of transport development on the environment. Getting to know the various factors that influence progress in the automotive industry. The role of fuel in the modern economy. Modern technologies used in transport and their impact on the environment.

Course-related learning outcomes

Knowledge:
1. Student should characterize the types of transport and its impact on the environment.
2. Student should characterize the factors influencing the evolution in the land, air and sea industries.

Skills:
1. Student is able to assess what factors influence the development of transport.

2.Student is able to interpret the impact of transport on the environment.

Social competences:
1. Student is willing to work in a group to solve problems related to the correlation between transport and the environment.
2. S tudent is aware of the role of transport and its impact on the environment.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

End-of-semester grade:
a) in the scope of laboratory classes, based on oral or written answers to each exercise, and a report on its progress according to the instructor's instructions. The final grade is obtained based on the average of all positive grades from the answers and reports.
b) in terms of lectures based on a written assessment conducted during the last classes.

Final grade criteria: <90–100> 5.0 (A); <80–90) 4.5 (B); <70–80) 4.0 (C); <60–70) 3.5 (D); <50–60) 3.0 (E); <0–50) 2.0 (F)

Programme content

Discussion of the impact of transport on the environment, including land, air and maritime industries. Discussion of material, repair and human factors influencing the transport-environment relationship.

Course topics

Lecture:
1. Impact of land transport on the environment.
2. Impact of air transport and sea transport on the environment.
3. Material factors influencing the transport-environment relationship.
4. Repair factors influencing the improvement of the transport-environment relationship.
5. Human factors influencing the transport-environment relationship.
6. Construction, types and structure of tires used in transport.
7. Impact of fuel mixtures and lubricants on driving comfort and the transport-environment relationship.
Laboratory:
1. Wear resistance test of selected friction pairs.
2. Hardness measurements of selected materials used for car parts.
3. Influence of a corrosive medium on the corrosion resistance of selected materials used for car parts.
4. Materials used in vehicle maintenance.
5. Analysis of used selected car parts in terms of their impact on the environment.

Teaching methods

Lecture: multimedia presentation, examples, discussion.
Laboratory: practical exercises, discussion.

Bibliography

Basic:
1. Gabryelewicz M.: Podwozia i nadwozia pojazdów samochodowych. Budowa, obsługa, diagnostyka i naprawa. Wydawnictwa Komunikacji i Łączności. Warszawa 2018
2. Jabłoński J. i in.: Technologie „Zero emisji”. Wydawnictwo Politechniki Poznańskiej. Poznań 2011
3. Wojewódzka-Król K.: Innowacje w transporcie. Wydawnictwo Naukowe PWN. Warszawa 2021
4. Wojewódzka-Król K., Załoga E. i in.: Transport. Tendencje zmian. Wydawnictwo Naukowe PWN. Warszawa 2022

Additional:
1. Ashby M. F.: Materials and the Environment. Wydawnictwo Elsevier, Oxford 2009
2. Grygier D.: Nanokrystalizacja cementytu w stalach perlitycznych stosowanych na druty kordowe do opon. Oficyna Wydawnicza Politechniki Wrocławskiej. Wrocław 2017
3. Paczulski M.: Technologia produktów naftowych. Oficyna Wydawnicza Politechniki Warszawskiej.

Warszawa 2024
4. Podniało A.: Oleje i smary w technice smarowania maszyn i pojazdów samochodowych. Wydawnictwo RB. Opole 2012
5. Radzimirski S., Pielecha J., Merkisz J.: Emisja zanieczyszczeń motoryzacyjnych w świetle nowych przepisów Unii Europejskiej. Wydawnictwa Komunikacji i Łączności WKŁ. Warszawa 2012

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00