COURSE DESCRIPTION CARD - SYLLABUS

Course name
Ecological aspects and diagnostics of powertrain systems [N1Trans1>EAiDUN]

Course

Field of study
Transport

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
part-time

Requirements
elective

Number of hours

Lecture
9

Laboratory classes
18

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

Knowledge: student has a basic knowledge of the environmental factors causing danger to the environment, meets the mechanisms of toxic compounds in transport and industry, know how to prevent the entry of harmful substances into the atmosphere, meets the classification of harmful compounds to human health and the safety data sheets Skills:s tudent is able to integrate the information, make their interpretation, draw conclusions, formulate and justify opinions, have general knowledge of safety and environmental protection in the workplace Social competencies:student is aware of the risks associated with the issue of harmful substances into the atmosphere and is aware of the negative environmental social behavior on health and human security in transport and industry

Course objective

Refer to environmental issues in industry, general knowledge of the risks associated with human activities now and the possible effects on future hazard classification and their determination

Course-related learning outcomes

Knowledge:
1. The student has a structured and theoretically founded general knowledge in the field of key issues of

technology and detailed knowledge in the field of selected guesses of this discipline of transport engineering.
2. The student has knowledge of important directions of development and the most important technical achievements and other related scientific disciplines, in particular transport engineering.
3. The student has basic knowledge about the life cycle of transport means, both hardware and software, and in particular about the key processes taking place in them.

Skills:
1. The student can acquire information from various sources, including literature and databases, both in Polish and English, appropriate to integrate them, make their interpretation and critical assessment, draw conclusions, and fully justify the opinions they formulate.
2. The student is able, by formulating and solving tasks in the field of transport, to apply properly selected methods, including analytical, simulation or experimental methods.
3. The student is able to take into account in the process of formulating and solving tasks in the field of transport engineering also non-transport aspects, in particular social, legal and economic issues

Social competences:
1. The student is aware of the social role of a technical university graduate, in particular, understands the need to formulate and communicate to the public, in an appropriate form, information and opinions on engineering activities, technical achievements, and the legacy and traditions of the profession of transport engineer.
2.The student correctly identifies and solves dilemmas related to the profession of a transport engineer

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Test of knowledge of the formation of harmful compounds, structures standards toxicity of exhaust gases. One test during the semester

Programme content

Lecture: classification of propulsion systems, basic information of ecological transport, basic knowledge of exhaust gas cleaning systems, eco-friendly technologies in transport, the impact of macroeconomic factors on the implementation of environmentally friendly technologies in transport

Course topics

none

Teaching methods

Informative (conventional) lecture (transfer of information in a systematic way) - can be of course (propedeutical) or monographic (specialist). The exercise method (subject exercises, exercises) - in the form of auditorium exercises.

Bibliography

Basic
1. Stanisław Wiąckowski, Toksykologia środowiska człowieka. Wydawnictwo: Branta, 2010 ISBN: 978-83-616-6806-0
2. Merkisz Jerzy, Mazurek Stanisław, Pokładowe Systemy Diagnostyczne Pojazdów Samochodowych. Wydawnictwa Komunikacji i Łączności WKŁ, 2006
3. Jerzy Merkisz, Ekologiczne problemy silników spalinowych, Wyd. Politechniki Poznańskiej, Poznań 1998
4. Merkisz J., Pielecha I., Alternatywne napędy pojazdów. Wydawnictwo Politechniki Poznańskiej, Poznań 2006.
Additional
1. Wojciech Serdecki, Badania silników spalinowych. Wyd. Politechniki Poznańskiej, Poznań 2012
2. Witold M. Lewandowski, Proekologiczne źródła energii odnawialnej. WNT, Warszawa 2002
3. Zdzisław Chłopek, Ochrona środowiska naturalnego. Pojazdy samochodowe. WKŁ, Warszawa 2003

4. Gronowicz J., Ochrona środowiska w transporcie lądowym. Wyd. ITE, Poznań ? Radom 2003

Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,00
Classes requiring direct contact with the teacher	27	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	63	3,00