COURSE DESCRIPTION CARD - SYLLABUS

Course name
Environmental Protection [N1Trans1>OŚwT]

Course

Field of study
Transport

Year/Semester
2/4

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
18

Laboratory classes
9

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

dr hab. inż. Miłosław Kozak prof. PP
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Lecturers

Prerequisites

KNOWLEDGE: the student has basic general knowledge about the construction of the surrounding world and the laws that govern it. SKILLS: the student is able to integrate the obtained information, interpret it, draw conclusions, formulate and justify opinions. SOCIAL COMPETENCES: the student is aware of the social and economic importance of environmental protection.

Course objective

To acquaint students with the basic concepts of environmental protection and the main ecological threats related to the operation of technical means of transport and possible remedial actions. Shaping pro-ecological attitudes of students.

Course-related learning outcomes

Knowledge:
Has ordered, theoretically founded general knowledge in the field of technology, transport systems and various means of transport
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:
The student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods
The student is able to design elements of means of transport using data on environmental protection

Social competences:
Can think and act in an entrepreneurial way, incl. finding commercial applications for the created system, taking into account not only business benefits, but also social benefits of the conducted activity
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:
Written credit in the form of a test at the end of the semester. Possibility to increase the grade for ongoing preparation and activity in classes.
Mandatory individual reports on laboratory activities. Final check on the issues of laboratory classes.

Programme content

Introduction to environmental protection and ecology. Basic environmental threats from transport. Influence of consumables on environmental pollution by transport. The mechanism of formation and methods of reducing the emission of toxic exhaust components. Exhaust gas treatment. Measurement methods and standards for the emission of toxic compounds. Generation and reduction of noise and vibrations in transport. Additional activities in transport for environmental protection. Environmental hazards in the transport of dangerous goods. Recycling of vehicles and their assemblies and components. Energy consumption in transport. Transport and global warming. Methods of valuation of environmental losses caused by transport. Main assumptions of sustainable transport.

Course topics

none

Teaching methods

1. Lecture with multimedia presentation, discussion on the discussed topics.
2. Laboratory: practical exercises according to the program of the subject.

Bibliography

Basic
1. Gronowicz J., Ochrona środowiska w transporcie lądowym. Wyd. Instytutu Technologii i Eksploatacji, Poznań-Radom 2003.
2. Merkisz J., Ekologiczne Problemy silników spalinowych, Tom I i II. Wyd. Politechniki Poznańskiej, Poznań 2000.
3. Merkisz J., Pielecha J., Radzimirski S., Pragmatyczne podstawy ochrony powietrza atmosferycznego w transporcie drogowym. Wyd. Politechniki Poznańskiej, Poznań 2009.
Additional
1. Dobrzańska B., Dobrzański G., Kiełczowski D., Ochrona środowiska przyrodniczego. Wyd. Naukowe PWN, Warszawa 2008.
2. Zięba S., Historia myśli ekologicznej. Wyd. KUL, Lublin 2004.

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