



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Protection of Environment

### Course

Field of study

Year/Semester

Construction and Exploitation of Means of Transport

2/2

Area of study (specialization)

Profile of study

Machines

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

part-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

9

0

0

Tutorials

Projects/seminars

9

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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### Prerequisites

KNOWLEDGE: the student has basic 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 familiarize students with the basic concepts of environmental protection and ecological threats



related to the operation of working machines, ways to minimize the negative impact on the environment and ways of land reclamation when harmful substances get into the environment. Shaping pro-ecological attitudes among students.

### Course-related learning outcomes

#### Knowledge

Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment

Has general knowledge in the field of standardization, EU recommendations and directives, systems of national, industry and international standards, and industrial standards

Has extended knowledge of the standards for working machines in the field of methods of calculating and testing machines, safety, including road safety, environmental protection as well as mechanical and electrical interface

#### Skills

He can estimate the potential threats to the environment and people from the designed working machine and vehicle from a selected group

Can communicate on specialist topics with a diverse audience

Can conduct a debate

Can interact with other people as part of teamwork and take a leading role in teams

Is able to independently plan and implement his own learning throughout life and direct others in this regard

#### Social competences

He is ready to critically assess his knowledge and received content

He is ready to fulfill social obligations, inspire and organize activities for the social environment

It is ready to initiate actions for the public interest

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The student is assessed for discussion and activity during lectures and exercises. Written credit for the lecture topics. Mandatory individual exercise reports. Final credit of exercises.

### Programme content

Environment and its protection - terminology, resources, state of emergency and institutions. Economic aspects of environmental protection. The impact of industry on the atmosphere, water, soil, and ways to reduce this impact. Use of used machine parts. The impact of the maintenance and repair sector on water and soil. The impact of agricultural mechanization on the environment.



## Teaching methods

1. Lectures with multimedia presentation.
2. Materials sent by the teacher in the form of pdf, video, presentation.
3. Development of the issues given by the Lecturer during the exercises and their presentation in front of the group.
4. Calculation of pollution minimization tasks.

## Bibliography

### Basic

1. Kłos Z., Feder S. (1994). Ochrona Środowiska w budowie maszyn roboczych i transporcie. Wydawnictwo Politechniki Poznańskiej.

### Additional

1. Osuch, A., Rybacki, P., Osuch, E., Adamski, M., Buchwald, T., & Staszak, Ż. (2016). Ocena stanu jakości wód jeziora Łomno. Inżynieria Ekologiczna.
2. Osuch, A., Rybacki, P., Osuch, E., Buchwald, T., & Staszak, Z. (2015). Analiza porównawcza metod zagospodarowania zużytych opon rolniczych. Technika Rolnicza Ogrodnicza Leśna, (5).
3. Buchwald, T., Rzeźnik, C., Staszak, Ż., & Osuch, A. (2015). Sposoby zagospodarowania zużytych olejów eksploatacyjnych w zakładach serwisowych ciągników rolniczych. Nauka Przyroda Technologie, 9(4), 53.

## Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	18	1,0
Student's own work (literature studies, preparation for exercises, preparation of a report on the developed issues, preparation for written completion of exercises and lectures) <sup>1</sup>	32	1,0

<sup>1</sup> delete or add other activities as appropriate