COURSE DESCRIPTION CARD - SYLLABUS

Course name
Environmental protection

Course

Field of study
Safety Engineering
Area of study (specialization)

Level of study
First-cycle studies
Form of study
full-time

Year/Semester
2/3
Profile of study
general academic
Course offered in
English
Requirements
elective

Number of hours

Lecture
15
Laboratory classes

Other (e.g. online)

Tutorials
15
Projects/seminars
15

Number of credit points

4

Lecturers

Responsible for the course/lecturer:
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Responsible for the course/lecturer:

Prerequisites

When starting this subject, the student should know the basic concepts of natural sciences, especially human sciences and the functioning of the natural environment (at the secondary school level). The student is able to interpret the phenomena occurring in the natural and work environment and their

influence on the functioning of the human body. Uses the known methods of researching phenomena and relations, and applies logical thinking to associate and evaluate them.

Course objective

Provide students with knowledge in the field of ecological sciences and macroergonomics and prepare them to make decisions that cause environmental effects and changes in working conditions. Developing students' skills to solve problems related to shaping a good quality of life, depending on the natural environment. The acquired knowledge, skills and competences will allow him to solve problems in the field of adapting working and living conditions to the proper functioning of the natural environment and the human body.

Course-related learning outcomes

Knowledge

1. The student has advanced knowledge of ergonomics, human ecology and environmental protection. [K1_W05]

Skills

1. The student is able to properly select the sources and information derived from them, making the assessment, critical analysis and synthesis of this information. [K1_U01]

2. The student is able to see system and non-technical aspects in engineering tasks, as well as socio-technical, organizational and economic aspects. [K1_U03]

3. The student is able to take part in the debate, to present the problem within the scope of safety engineering using appropriately selected means. [K1_U09]

4. The student is able to plan, organize and implement individual and team work and carry out experiments, including measurements and computer simulations, interpret the obtained results and draw conclusions. [K1_U11]

5. The student is able to identify changes in the requirements, standards, regulations and technical progress and the reality of the labor market, and on their basis determine the need for supplementing knowledge. [K1_U12]

Social competences

1. The student is able to see the cause-and-effect relationships in the implementation of the set goals and use the ranks in relation to the significance of alternative or competitive tasks. [K1_K01

2. The student is aware of the importance of knowledge in solving problems in the field of safety engineering and continuous improvement. [K1_K02]

3. The student is aware of the understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the related responsibility for the decisions made. [K1_K03]

4. The student is aware of the responsibility for their own work and readiness to submit to the rules of teamwork and responsibility for jointly performed tasks.[K1_K07]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The knowledge acquired during the lectures is verified on the basis of a final test prepared in the form of a test (the answers include: choosing one correct one from among several, supplementing a sentence with an appropriate concept or definition, or completing the definition). Passing threshold: 50% of points. Assessment criteria, which form the basis of the questions, are passed on to students during the last lecture.

The skills acquired during the classes are checked on an ongoing basis through reports on individual exercises. The final grade is the arithmetic mean of the scores for all reports.

The assessment of the project classes results from the assessment of the current progress in the implementation of the project stages, and the final - is issued on the basis of the form and quality of the project and its presentation to the group.

Passing on the first and second attempt min. 50% of all points.

Programme content

Lectures

Basic concepts of ecology, environmental protection, human ecology, sozology; human connections with the environment; types of resources; environmental protection against the problems of biosphere pollution; identification of environmental effects; Life Cycle Assessment (LCA) and eco-indicators assessment; environmental policy tools - legal, economic and marketing; concept and assumptions of sustainable development; principles, laws and indicators of eco-development.

Classes

Functioning of environmental protection facilities (if possible, field exercises: sewage treatment plant, waste landfill / composting plant, waste incineration plant, water treatment plant);

Computer simulations of phenomena related to contemporary threats to the natural environment (water footprint calculator, modeling of chemical hazards depending on weather parameters).

Project

Identification of environmental effects related to the life cycle of a specific product (product characteristics: dimensions, purpose, physical properties, structure and chemical composition; starting materials, method of collecting natural resources, pre-treatment, manufacturing technologies - conditions, auxiliary materials, waste, operating conditions, methods disposal, environmental effects of all stages of the life cycle - on the atmosphere, hydrosphere and lithosphere). Observation of the dependence of atmospheric pollution indicators on the weather. The impact of changes to the product version on the value of the eco-indicator.

Teaching methods

1. Conversational lecture with elements of dialogue, illustrated with multimedia presentations

2. Classes - field classes and computer simulations

3. Project - conducted by the method of case studies; with the use of secondary data, e.g. from the Chief Inspectorate of Environmental Protection, with the use of the EXCEL program

Bibliography

Basic

1. Górka K., Poskrobko B., Radecki W., Ochrona środowiska, PWE, Warszawa 2001.

2. Jabłoński J., Janik S., Mateja B., Inżynieria ochrony środowiska, WPP, Poznań 2011.

3. Kozłowski S., Ekorozwój. Wyzwanie XXI wieku, Wydawnictwo Naukowe PWN, Warszawa 2000.

4. Mateja B., Ekologia. Wybrane zagadnienia, WPP, Poznań 2011.

5. Wolański N., Ekologia człowieka, t.1, Wydawnictwo Naukowe PWN, Warszawa 2006.

Additional

1. Act of 27 April 2001, Environmental Protection Law, Journal of Laws, No. 62, item 627

2. Stasiuk-Piekarska A., Włodarczyk A., Innovation in the pursuit of sustainable manufacturing, Proceedings of the 36th International Business Information Management Association (IBIMA), ISBN: 978-0-9998551-5-7, 4-5 November 2020, Granada, Spain., s. 7363-7370

3. Dahlke G., Drzewiecka M., Stasiuk-Piekarska A.K., Pozasłuchowy wpływ elektrowni wiatrowych na człowieka [in:] Logistyka 5/2014, s. 290-300.

4. Stasiuk-Piekarska A., Drzewiecka M., Dahlke G., Influence of macroergonomic factors on production systems organizing in automotive industry [in:] Vink P. [red.], Advances in Social and Organizational Factors, ISBN 978-1-4951-2102-9, str. 194-205.

5. Piaskowski M., Stasiuk A., Application of eco-balance in area of logistics - a case study, [in:] Golińska P., Fertsch M., Marx-Gómez J., Information Technologies in Environmental Engineering, Berlin 2011 (ISBN 978-3-642-19536-5).

Breakdown of average student's workload

	Hours	ECTS
Total workload	105	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for tutorials, preparation for tests, project preparation) [1]	60	2,0

[1] delete or add other activities as appropriate