COURSE DESCRIPTION CARD - SYLLABUS

Course name
Environmental Protection

Course

Field of study
Safety Engineering

Year/Semester
2/3

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes

Other (e.g. online)

Tutorials
15

Projects/seminars
30

Number of credit points

5

Lecturers

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

Prerequisites

The student should know: basic concepts in the field of natural sciences, especially human and environmental sciences (at secondary school level), basic technologies of production processes, selected concepts of organization and management sciences. The student can interpret phenomena occurring in the natural and work environment. The student applies the acquired methods of studying phenomena and relationships and uses logical thinking to associate and evaluate them. The student is aware of the role of environmental problems related to human work and is ready to actively participate in shaping safe working conditions and reduce anthropopressure on the natural environment.

Course objective

Providing students with knowledge in the field of ecological sciences and macroergonomics and preparing them for making decisions that lead to environmental effects and cause 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 the student to solve problems in the field of adjusting working and living conditions to the proper functioning of the natural environment and the human body.

Course-related learning outcomes

Knowledge

1. The student knows issues related to ergonomics, human ecology and environmental protection. [P6S_WG_05]

Skills

1. The student can properly select sources and information derived from them, make an assessment, critical analysis and synthesis of this information. [P6S_UW_01]

2. The student can recognize in engineering tasks systemic, non-technical, socio-technical, organizational and economic aspects.[P6S_UW_03]

3. The student can present by means of properly selected measures a problem that fits the framework of safety engineering.[P6S_UK_01]

4. The student can plan and carry out experiments, including computer measurements and simulations, interpret obtained data and draw conclusions. [P6S_UO_01]

5. The student can identify changes in requirements, standards, regulations, technical progress and reality of the labour market and on their basis determine the needs for improving knowledge. [P6S_UU_01]

Social competences

1. The student can perceive cause-and-effect relationships in achieving goals and rank the significance of alternative or competitive tasks. [P6S_KK_01]

2. The student is aware of the importance of knowledge in solving problems in the field of safety engineering and of continuous improvement. [P6S_KK_02]

3. The student is aware of non-technical aspects and effects of engineering activity, including its environmental impact and the resulting responsibility for decisions taken. [P6S_KK_03]

4. The student is aware of the responsibility for his/her own work and shows willingness to follow rules of teamwork and to take responsibility for jointly accomplished tasks. [P6S_KR_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired as part of lectures is verified on the basis of the final course assessment test (tasks include choosing the correct answer out of several available ones, filling in a sentence with an appropriate concept or term or providing a definition). Assessment issues constituting the basis of tasks are forwarded to students during the last lecture.

Skills acquired during tutorials are checked on an ongoing basis, through reports on individual assignments. The final grade is the arithmetic mean of the scores for all reports.

The grade for project classes results from the assessment of the progress of particular project stages, while the final grade is given on the basis of the form and quality of the project and its presentation in front of the group.

Passing threshold: 50% of points.

Programme content

Lectures

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

Tutorials

Operation of environmental protection facilities (sewage treatment plant, landfill/composting plant, waste incineration plant, water treatment plant);

Computer simulations of phenomena related to contemporary threats to the natural environment (carbon footprint and water footprint calculator).

Project

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

Teaching methods

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

2. Tutorials - field trips and computer simulations

3. Project - conducted using the case method (case study); using the Internet- collecting data from the Chief Inspectorate of Environmental Protection; using 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	125	5,0
Classes requiring direct contact with the teacher	60	2,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) [1]	65	2,5

[1] delete or add other activities as appropriate