STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Environmental Management**			Code **1010101261010130295**
Field of study **Environmental Engineering First-cycle Studies**	Profile of study (general academic, practical) **(brak)**		Year /Semester **3 / 6**
Elective path/specialty **-**	Subject offered in: **Polish**		Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**		
No. of hours Lecture: **30** Classes: **-** Laboratory: **-** Project/seminars: **-**			No. of credits **2**
Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**		
Education areas and fields of science and art **technical sciences**			ECTS distribution (number and %) **2 100%**

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Fundamentals of environmental engineering. Basics of civil engineering. Basics of thermodynamics.
2	**Skills**	Understanding the principles of sustainable development. The ability to recognize complex investment processes.
3	**Social competencies**	Awareness of continuous replenishment of knowledge and skills.

Assumptions and objectives of the course:

Transfer of basic knowledge in the field of environmental management in accordance with the principle of sustainable development, taking into account the principles of integrated environmental protection in the company and eco-energy analysis of the product in the Whole Life Cycle (LCA).

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. The student knows and understands the modern models and strategies for environmental management (during lectures) - [K_W08]
2. The student knows the principles of eco-management EMAS and ISO 14001 across the enterprise (during lectures) - [K_W09]
3. The student knows the principles of analysis of the product in the whole life cycle (LCA) (during lectures) - [K_W06, K_W09]
4. The student has a knowledge of the practical application of legislation in the field of environmental management (during lectures) - [K_W08]

Skills:

1. The student is able to practice modern environmental management strategies (during lectures) - [K_U10]
2. The student is able to take into account the principles of the strategy of Cleaner Production in the design of systems (during lectures) - [K_U12]
3. The student is able to define the objectives, tasks and environmental policy in the functioning of the company (during lectures) - [K_U10, K_U11]
4. The student can take into account the principles of LCA in the process of evaluating energy and environmental product (during lectures) - [K_U12, K_U15]]

Social competencies:

1. Student deeper realizes the essence of the principles of sustainable development in the functioning of society (during lectures) - [K_K02, K_K05]
2. Student recognizes the need for systematic deepening and extending their competencies (during lectures) - [K_K01]

Assessment methods of study outcomes

Written final test at the end of the lectures (effects: W6, W8, W9, U10, U11, I12, U15, K1, K2, K5); duration 45 min.; possible individual discussion after the publication of final test results; Evaluation of written work based on points earned from individual tasks, threshold: 50%. Detailed scoring criteria and scale are given before the exam.

Course description

- The concept of sustainable development
- Models of environmental policy implementation
- Cleaner Production Strategy and tools for its implementation
- The principle of BAT; Basic criteria for BAT
- The principle of integrated environmental protection in accordance with the IPPC Directive
- Analysis of the energy and ecological product in the full life cycle (LCA) - methodology
- Model environmental management system of the organization according to ISO 14001, the basic principles of ISO 14001, procedures
- Environmental Management System EMAS
- Principles of emissions trading and their implementation in EU
- Environemnt Protection Law. Basic principle II National Environmental Policy
- Report on the impact of the project on the environment: obligatory and alternative scope of the report
- Permits for the introduction of pollutants into the environment, the scope of application
- Integrated permits - which relate to the installation procedure, the content of an application for an integrated permit
- Emission standards and imisyjne - rules.

Methods:
- lecture,
- lecture with multimedia presentation.

Basic bibliography:

1. Górzyński J.: Podstawy analizy środowiskowej wyrobów i obiektów, WNT, Warszawa 2007
2. Nowak Z. (red): Zarządzanie środowiskowe, Cz. I, II, Wyd. Politechniki Śląskiej, Gliwice, 2001
3. Ekozarządzanie w przedsiębiorstwie, Centrum informacji o Środowisku, Warszawa, 2010
4. Norma ISO 14001
5. Normy ISO 14041 i kolejne
6. www.mos.gov.pl

Additional bibliography:

1. Prawo ochrony środowiska, wraz ze zmianami
2. Rozporządzenia z zakresu ochrony środowiska

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures (contact hours)	30
2. Consultation (contact hours)	5
3. Homework and its defense (own work)	15

Student's workload

Source of workload	hours	ECTS
Total workload	50	2
Contact hours	35	1
Practical activities	15	1