STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Natural Resources and Environmental Engineering	**1011102231011105153**

Field of study	Profile of study (general academic, practical)	Year /Semester
Engineering Management - Full-time studies -	**(brak)**	**2 / 3**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Quality Systems and Ergonomics	**Polish**	**elective**

Cycle of study:	Form of study (full-time,part-time)
Second-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **15** Classes: **15** Laboratory: **-** Project/seminars: **-**	**6**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**6 100%**
Technical sciences	**6 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student defines and characterizes: - principal terms from the range of natural science related to the functioning of the natural environment; - basic technologies of production processes; - chosen notions from the area of organization and management science. He recognizes types of environmental risks and some methods used for eliminating environmental pollutants.
2	**Skills**	Student is able to interpret phenomena of transformation in the natural environment, he applies acquainted methods for examining phenomena and dependencies, uses logical reasoning for colligating and assessing observed phenomena from the range of the occurrence and counteractions for environmental threats and he identifies sources and results of biosphere pollution.
3	**Social competencies**	Student is aware of the role of environmental problems and wants to be active in the formation of a correct quality of people?s life and ecosystems

Assumptions and objectives of the course:

Acquainting the student with engineering methods in the protection, rational formation and exploitation of the natural environment, as well as environment of rooms and civil structures. The student obtains skills for differing approaches for environmental protection, formation of requirements concerning devices and installations for environmental protection, classification of technologies of utilization and removing pollutants, as well as determining conditions for implementing various methods for determined environmental objectives.

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

Knowledge:

1. Student should have the knowledge on the role of man in minimizing environmental causes of any activity of man and on adjusting methods, techniques and devices of environmental protection - [K2A_W06]

2. Student has a deepened knowledge about ethical norms connected with the environmental protection, their sources and methods of influencing the organization - [K2A_W13]

Skills:

1. Student interprets causes and the course of processes and economic and legal phenomena that refer the influence of the enterprise and nature, he suggests possibilities of implementing solutions for environmental protection - [K2A_U02]

2. Student has the skill to use his knowledge from the range of methods, techniques and installation of the environmental protection that is widened with a critical analysis of efficiency and usability of the applied knowledge - [K2A_U06]

3. Student understands and analyzes social phenomena connected with the need of guarding the natural environment safety, evaluates these phenomena with scientific methods and acts in favor off environmental protection - [K2A_U08]

Social competencies:

1. Is aware of the importance of professional behavior and of compliance with the rules of professional ethics and respect for the diversity of ideas and cultures - [K2A_K04]

2. Can contribute in the preparation of the social projects related to environmental protection engineering and he is active in running ventures resulting from these projects - [K2A_K05]

3. Student is aware of the interdisciplinary character of the knowledge from the range of environmental protection engineering; he has the skill to solve composite environmental problems of the organization and forms interdisciplinary teams - [K2A_K06]

Assessment methods of study outcomes

Forming assessment:

a) classes: on basis of public presentations of currently prepared examples from practice or issues related to the subject of determined classes;

b) lectures: on basis of participation in discussion connected with the discussed material

Final assessment:

a) classes: based on the average from presented elaborations;

b) lectures: based on written test (during last classes of the semester) from the range of lectures (in form of 3 answers to open questions).

Course description

Lectures:

1. Two types of approaches to the environmental protection,
2. Water treatment engineering,
3. Sewage treatment engineering,
4. Atmosphere protection engineering,
5. Permanent waste disabling engineering,
6. Engineering of protection against sounds,
7. Zero Emission Technologies.

Classes:

1. Problems of water supplies,
2. Methods of the water treatment for different needs,
3. Transport and the sewage treatment,
4. Sludge utilization,
5. Data collection about emission into the atmosphere,
6. Dedusting devices,
7. Examples of applying various methods of disabling permanent waste,
8. Role of the selection of wastes ?at the source? and their segregation,
9. Classification and identification of noise and its environmental causes,
10. Analysis of exemplary solutions of protection of the air against noise.

Basic bibliography:

1. Bilitewski B., Hardtle G., Marek K., Podręcznik gospodarki odpadami, Wydawnictwo Seidel ? Przywecki, Warszawa 2006
2. Engel Z., Ochrona środowiska przed drganiami i hałasem, PWN, Warszawa 1993
3. Jabłoński J., Janik S., Mateja.B.,Inżynieria ochrony środowiska, WPP, Poznań 2011
4. Kowal A.L., Świderska-Bróż M., Oczyszczanie wody, PWN, Warszawa 2005
5. Technologie zero emisji, Jabłoński J.(red.), WPP, Poznań 2011
6. Zarzycki R., Imbierowicz M., Stelmachowski M., Wprowadzenie do inżynierii ochrony środowiska, WNT, Warszawa 2007

Additional bibliography:

1. wymagania prawne

Result of average student's workload

Activity	Time (working hours)
1. Lectures	15
2. Classes	15
3. Consultations	40
4. Preparation of the presentation	50
5. Preparation for classes and test	20
6. Test	2
7. Discussing results of the test and evaluations	8

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	150	6
Contact hours	80	3
Practical activities	15	3