



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ecology and environmental management [S1ZiIP2>EiZS]

### Course

Field of study

Management and Production Engineering

Year/Semester

4/7

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

0

Other

0

Tutorials

15

Projects/seminars

15

### Number of credit points

5,00

### Coordinators

### Lecturers

### Prerequisites

Basic knowledge of chemistry, materials science and production management.

### Course objective

The aim of the course is to acquire knowledge of the basics of ecology and contemporary problems of environmental protection, landscape protection and environmental management

### Course-related learning outcomes

Knowledge:

Has basic knowledge of ecology and environmental management.

Indicates the reasons for the need to conduct environmental management.

Can determine the impact of the company's activities on the environment.

Skills:

Can recognize and define the way of industrial waste management.

Can design an environmental management system for a selected production company.

Social competences:

Can work independently and as a team on a given task.

Is aware of the role of environmental management in a production company, can express opinions on ecology and waste management.

Understands the need for lifelong learning.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

#### Lecture

Written assessment 50% of points based on 5-10 test tasks + 50% based on max. 5 open questions. A positive assessment if you obtain at least 50.1% of correct answers. Assignment of grades to percentage ranges of results: <90-100> very good; <80-90) good plus; <70-80) good; <60-70) satisfactory plus; <50-60) satisfactory; <0-50) unsatisfactory.

#### Tutorial

Attendance at fieldwork. Active participation in classes. Written assessment: 5-10 issues. A positive assessment if you obtain at least 50.1% of correct answers. Assignment of grades to percentage ranges of results: <90-100> very good; <80-90) good plus; <70-80) good; <60-70) satisfactory plus; <50-60) satisfactory; <0-50) unsatisfactory.

#### Project

Attendance at classes. Execution of a project concerning the preparation of an environmental review and development of a proposal for a method aimed at reducing the impact of the selected production technology on the environment. Presentation on the group forum combined with discussion. Prepared materials and presentation placed on the e-Courses website assessed by the instructor.

### Programme content

History of environmental protection. Fundamentals of ecology. Ecology and environmental protection in enterprise management, models and definitions of environmental management. Environmental management systems. Legal and economic foundations of environmental protection in Poland and the EU. Threats to the natural environment. Industrial and municipal pollution and their impact on living organisms and the environment. Degradation and reclamation of elements of the natural environment. Protection of the lithosphere, hydrosphere and atmosphere, landscape protection. Municipal and industrial sewage treatment plants. Sources of noise and its impact on human health. Projects and technical measures in environmental protection. Alternative energy sources.

### Course topics

#### Lecture

Introduction: nature, environment, environmental protection law, processes in nature. Degradation phenomena in the environment, prevention of degradation. Air purification methods. Water, water and sewage purification methods. Waste: threats, collection, segregation, incineration, disposal. Alternative energy sources. Ecology in the enterprise, work environment, management systems. Global environmental situation.

#### Tutorial

1. Water: treatment. sewage treatment (discussion and/or tour)
2. Alternative energy sources (discussion and/or tour)
3. Environmental policy
4. Work environment, measurements of working conditions
5. Waste, BDO, waste catalog

#### Project

Selection of a production station. Preparation of a description of the selected station. Waste generated at the selected station, marking them in accordance with KO. Performance of an environmental review: aspects of input and output from the process, environmental aspects and their impact on the environment at the selected station. Basics of developing an environmental policy, goals and tasks. Environmental education program - development of guidelines. Selection of a proposal for a method of neutralizing one selected aspect degrading the environment for a selected site.

### Teaching methods

Lecture: multimedia presentation, film, discussion.

Tutorial: multimedia presentation illustrated with examples given on the board, exercises, group work, discussion, visit to selected plants (incinerator, sewage treatment plant or municipal waterworks).

Project: multimedia presentation illustrated with examples given on the board, assistance in preparing a project concerning the environmental management system in a selected enterprise (at a selected position), assistance in selecting a method to counteract the effects of environmental pollution, group work, discussion.

## Bibliography

### Basic:

1. Zarzycki R., Imbierowicz M., Stelmachowski M.,: Wprowadzenie do inżynierii i ochrony środowiska. Cz. I i II. WNT. Warszawa 2007.
2. Gajdzik B., Wyciślik A.: Wybrane aspekty ochrony środowiska i zarządzania środowiskowego. Wyd. Politechniki Śląskiej. Gliwice 2007
3. Poskorbko B.: Zarządzanie środowiskiem. PWE. Warszawa 2007.
4. Stefanowicz T.: Wstęp do ekologii i podstawy ochrony środowiska Wyd. Politechniki Poznańskiej. Poznań 1996
5. Kłos Z. Feder S. Ochrona środowiska w budowie maszyn i transporcie. Wyd. Politechniki Poznańskiej. Poznań 2002

### Additional:

1. Praca zbiorowa Zarządzanie środowiskowe ISO 14 000, tom 1-5 Wyd. CSzIOSJ Politechniki Krakowskiej Kraków 2008
2. Bilitewski B., Härdtle G., Marek K. Podręcznik gospodarki odpadami: teoria i praktyka Wyd. Seidel-Przywecki Warszawa 2003

## Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	60	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,50