COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ecotechnologies

Course

Field of study

Mechanical and Automotive Engineering

Year/Semester

1/1

Area of study (specialization)

Product Engineering

Profile of study

Level of study

Course offered in

english

Form of study

Requirements

Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

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Piotrowo 3 Street, 60-965 Poznan

Responsible for the course/lecturer:

Prerequisites

Knowledge: Student has a basic knowledge about the questions of environmental impacts of technical objects and technologies

Skills: Student is able to integrate the interdisciplinary information acquired; he can interpret them, draw conclusions, formulate opinions. He can describe the categories of environmental threats caused

by chosen technological processes accomplished in the field of machinery manufacturing and operation. He can show the ways of counteraction the selected environmental threats

Social competencies: Student is aware of the importance of human activities in relationship with the environment, he understands their general aspects and consequences

Course objective

Acquaintance of basic technologies and devices used in the environmental protection

Course-related learning outcomes

Knowledge

Has knowledge of the principles of safety and ergonomics in the design and operation of machines and the threats that machines pose to the natural environment.

Has general knowledge of standardization, EU recommendations and directives, national, industry and international standards systems, and industrial standards.

He has in-depth knowledge of the construction, principles of operation and classification of machines from a selected group.

Skills

He can estimate the potential threats to the environment and people from the designed working machine and vehicle from a selected group.

Can conduct a debate.

Can interact with other people as part of teamwork and take a leading role in teams.

Social competences

Student is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment, is aware of responsibility for decisions.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Pass on the base of the control work (written test), presentation of the results of the individual or group work

Programme content

Critical review of the technical devices in the air protection, water protection (including sea water protection), instalations for wastewater treatment, soil protection. Analysis and reduction of industry and communication noise. Machines and devices in waste management. Devices used in the energy management, possibilities of the renewable energy sources application. Processes and machines used in the regeneration and utilization. Systems and devices used in the environment state monitoring.

Teaching methods

Lecture: multimedial presentation, illustrated with examples on the board

Laboratories: individual exercises supported by the dedicated software, done under the supervision of subject caretaker

Bibliography

Basic

Riffat R., Fundamentals of Wastewater Treatment and Engineering. IWA Publishing 2012.

Spellmann F., Handbook of Water and Wastewater Treatment Plant Operations. CRC Press 2003

Brown R.C., Air Filtration: An Integrated Approach to the Theory and Applications of Fibrous Filters. Pergamon Press 1993

Ludwig Ch. et al., Municipal Solid Waste Management. Springer Ed., 2003

Additional

Bever J. i in., Zaawansowane metody oczyszczania ścieków. Oficyna Wydawn. Projprzem-Eko, Bydgoszcz 1997

Kabsch P., Odpylanie i odpylacze. WNT, Warszawa 1992

Kłos Z., Feder S. Ochrona środowiska w budowie maszyn i transporcie. Wyd. PP, Poznań 2002

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tests, preparing for tutorials, consultation) [1]	20	1,0

[1] delete or add other activities as appropriate