UNIVERSITY
OF WARMIA AND MAZURY
IN OLSZTYN

Faculty of Geoengineering

Course title: PRO-ECOLOGICAL TECHNOLOGIES

ECTS credit allocation (and other scores): 1.5

Semester: spring

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 15/15

Course coordinator/ Department and e-mail: prof. dr hab. inż. Marcin Dębowski/Department of Environmental Engineering; marcin.debowski@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Construction, principle of operation and calculation principles of boilers for combustion of conventional fuels and biomass. Calculations of modern devices for reducing the emission of pollutants into the atmosphere, including absorbers and dust collectors. Calculations of devices used to reduce emissions of pollutants (sewage, waste) from industrial plants to the environment. Calculations of basic systems related to the use of renewable energy. Techniques and methods of analyzing the influence of industrial plants on the components of the natural environment. Characteristics of systems for monitoring the impact of production technologies on the environment.

LECTURES: Legal, economic and technical conditions for the use of the best available environmental protection technologies. Comparison of the nuisance of various industries for the main components of the environment. The best available technologies in thermal energy based on non-renewable energy sources. Analysis of various fuels and devices for their combustion in terms of their impact on the environment. Use of renewable energy sources. Analysis of the best available technologies in selected industries and determining their impact on the environment. Environmental impact assessment of selected technologies for obtaining natural resources. Analysis of the effects of pro-ecological activities carried out in industrial plants. Selection of the best production technologies in terms of their impact on the environment.

Learning purpose: Transfer, arrangement and development of general knowledge in the field of the latest technologies limiting the emission of pollutants to the atmosphere, water and other components of the natural environment.

On completion of the study programme the graduate will gain:

Knowledge: Has knowledge of issues related to the impact of the power industry and industrial plants on the components of the natural environment. He knows the technologies of limiting and monitoring pollutant emissions.

Skills: Assesses the influence of technology on the components of the natural environment. It determines the critical points of production processes in terms of pollutant emissions. Selects the best technologies to reduce the negative impact of industry on the environment. He can coordinate the work of the team responsible for the implementation of pro-ecological technologies and clean production technologies.

Social Competencies: Has the ability to independently identify the elements of the production system of industrial plants that have a negative impact on the components of the natural environment. He is prepared to determine the impact and impact of basic pollutants on the environment and is competent to select and implement the best technologies to reduce the emission of pollutants into the environment.

Basic literature:

1) Kucowski J., Damazy L., Przekwas M, Energetyka a ochrona środowiska, wyd. WN, 1997; 2) Budniowski A, Ochrona środowiska jako problem globalny" wyd. PWE, 1998; 3) Nowak Z, Zarządzanie środowiskiem podręcznik akademicki", wyd. Politechnika Śląska, 2001; 4) Lewandowski J., Zarządzanie środowiskiem w przedsiębiorstwie", wyd. Politechnika Łódzka., 2000

Supplementary literature:

1) Pełka-Gutowska E., Edukacja i ochrona środowiska, wyd. Nowa Era, 2001; 2) Kiełczewski D, Prawne i organizacyjne podstawy ochrony środowiska", wyd. Ekonomia i Środowisko., 2003

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.28

Student's independent work: 0.22