UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wybierz element.

Course title: BIOLOGICAL WASTEWATER TREATMENT

ECTS credit allocation (and other scores): 2.5

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: 30

Course coordinator/ Department and e-mail: Dr. Habil. Eng. Magdalena Zielińska, Department of Environmental Biotechnology; magdalena.zielinska@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Wastewater treatment plant configuration. Technological parameters of biological stage wastewater treatment plant. Designing the activated sludge system for organic carbon removal processes with nitrification. Interaction between biological reactors and final clarifiers. Designing step- feed denitrification process. The technological and technical parameters pre-anoxic system. Denitrification with external sources of organic carbon. Design the A/O system. Design the three-stage activated sludge system.

LECTURES: Wastewater characteristic. Technical and microbial aspects of activated sludge process. Single, two and three stages activated sludge processes. Removal of organic carbon by activated sludge. Nitrification. Denitrification. Technological system for nitrogen removal. The single reactor system for nitrogen removal. Biological mechanism of phosphorus removal. Three stages system of activated sludge.

Learning purpose: Acquisition of the ability to design biological wastewater treatment systems

On completion of the study program the graduate will gain:

Knowledge: Understanding the biological wastewater treatment systems using the activated sludge method

Skills: Acquiring the ability to design activated sludge systems

Social Competencies: The importance of the selection of technological solutions in environmental protection.

Basic literature:

1) McGraw-Hill, Engineering (Treatment, Disposal, Reuse), International Editions 1991. 2) Jordning H- J. Winter J. 2005. Environmental Biotechnology Concept and applications. Wiley-Blackwell; 1st edition (January 24, 2005); 3) Qasim S. R. Wastewater Treatment Plants Planning, Design, and Operation. First Published 1999, eBook Published 25 October 2017

Supplementary literature: Journals in the field of environmental engineering

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.36

Student's independent work: 2.14