

Course title: WASTEWATER TECHNOLOGY

ECTS credit allocation (and other scores): 4.0

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 30/15

Course coordinator/ Department and e-mail: Prof. Dr. Habil. Eng. Agnieszka Cydzik-Kwiatkowska, Department of Environmental Biotechnology; agnieszka.cydzik@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Determination of the effect of organic loading rate on the effectiveness of organics, nitrogen and phosphorus removal from municipal wastewater with the activated sludge method. Calculation of operational parameters of activated sludge. Effect of type of aeration on oxygenation capacity of liquids. Effect of pre-treatment on sewage sludge dewatering. Chemical precipitation of phosphorus.

LECTURES: Pollutant indicators in wastewater. Technological parameters of wastewater treatment systems. Characteristics of technological solutions used on four stages of wastewater treatment. Single and multi-stage activated sludge systems.

Learning purpose: Acquainting with unit processes used in wastewater sludge treatment. Shaping the ability to choose technological concepts and assess the technological solutions used.

On completion of the study programme the graduate will gain:

Knowledge: Student knows the technologies used in wastewater treatment; is able to choose, based on the properties of wastewater, unit processes for removing contaminants and describes the efficiency of unit processes in the technological systems; selects technological parameters of unit processes of wastewater treatment.

Skills: Student analyses unit processes and understands their role in technologies used in environmental protection.

Social Competencies: Student is aware of the importance of basic and applied knowledge in the introduction of technologies to prevent environmental degradation.

Basic literature: van Haandel A.C., J.G.M. van der Lubbe, Handbook of Biological Wastewater Treatment. Design and Optimisation of Activated Sludge Systems, IWA Publishing 2012.

Supplementary literature: Materials and laboratory protocols provided by a teacher; selected publications from journals: Water Research, Desalination, Water Science and Technology; Desalination and Water Treatment, Journal of Water Process Engineering, and other.

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.96

Student's independent work: 3.04