UNIVERSITY
OF WARMIA AND MAZURY
IN OLSZTYN

Faculty of Geoengineering

Course title: LAB AEROBIC STABILIZATION OF SOLID WASTE

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: 20

Course coordinator/ Department and e-mail: Slawomir Kasinski PhD Eng., Department of Environmental Biotechnology; slawomir.kasinski@uwm.edu.pl

Type of classes: classes

Substantive content

CLASSES: Observation of the municipal waste stabilization process under passive aeration conditions. Preparation of the test stand in semi-technical scale. Getting to know the basic ones physicochemical analyzes related to the biological treatment of municipal waste solids. Determining selected parameters of municipal solid waste stability during their processing in conditions of passive aeration. Evaluation of the level of waste stability based on the obtained results.

LECTURES: no lectures

Learning purpose: The aim of the course is to provide basic knowledge in the field of biological waste treatment municipal in aerobic conditions, as well as the development of skills allowing for optimization such systems in technical conditions.

On completion of the study programme the graduate will gain:

Knowledge: The student learns about the fundamental technological aspects of the aerobic waste stabilization process, including the tendencies of changes in physicochemical parameters throughout the process, and their correlation with the degree of waste stability. Upon completing the course, the student should possess basic knowledge in optimizing the municipal waste stabilization process at a technical level. This involves analyzing key stability criteria, such as AT4 (four-day respirometric activity) or LOI (loss on ignition).

Skills: Throughout the classes, the student gains proficiency in evaluating the efficacy of the technological process relying on the biological treatment of municipal waste in aerobic conditions. The student becomes adept at fundamental laboratory techniques for analyzing conditions within an aerobic stabilization reactor.

Social Competencies: is designed to equip students with the necessary competencies to work in facilities engaged in the processing of municipal and organic waste. These facilities typically include composting equipment for municipal waste, sewage sludge, or green waste. The acquired technological knowledge also lays the foundation for mastering bio-waste management technology.

Basic literature: Roger Tim Haug, The Practical Handbook of Compost Engineering, wyd. CRC Press, 1993; Heribert Insam, Nuntavun Riddech, Susanne Klammer, Microbiology of Composting, wyd. Springer, 2002, t. 14; L.F. Diaz, M. de Bertoldi, W. Bidlingmaier, Compost Science and Technology, wyd. Elsevier, 2011;

Supplementary literature: T. V. Ramachandra, Management of Municipal Solid Waste, wyd. TERI Press, 2006

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 0.79

Student's independent work: 0.71