

Course title: SOIL SCIENCE AND SOIL RECLAMATION

ECTS credit allocation (and other scores): 3.0

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: Dr. Habil. Eng. Mariusz Gusiatin, Assoc. Prof./Department of Environmental Biotechnology; mariusz.gusiatin@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Auditorium classes: Characterization of soil morphology. Soil pits and soil horizons. Soil classification based on grain size distribution (grain curves, soil texture triangle). Physical properties of soils. Laboratory classes: Determination of selected physico-chemical soil properties: bulk density, soil porosity, soil consistency, soil moisture, water holding capacity, soil buffering capacity, pH, salinity, carbonates, cation exchange capacity, liming need assessment, soil organic carbon and soil organic matter, soil analysis in field conditions.

LECTURES: Soil as a natural resource and ecological environment. Formation of soils and soil-forming factors. Soil taxonomy. Soil fertility. Forms of soil degradation. Legal bases on soil pollution. Evaluation of soil contamination degree. The concepts and phases of soil reclamation. Management of degraded areas. Classification of soil reclamation methods. Treatment of soils contaminated with heavy metals and oils. Plants in soil reclamation.

Learning purpose: This course introduces basic principles of soil science, provides information on soil properties, degree and forms of soil degradation, and on selected soil reclamation and remediation methods.

On completion of the study programme the graduate will gain:

Knowledge: fundamental concepts of soil science, including soil formation, classification, and characterization. Principles and methods of soil reclamation.

Skills: basic understanding of all the key concepts and terminologies of every aspect of soil, soil characterization based on its properties, selection of soil reclamation methods depending on the form of soil degradation

Social Competencies: awareness of the soil function in the environment, the importance of soil protection and soil reclamation methods

Basic literature: Rathinasamy A., Bakiyathu Saliha B. 2020. Fundamentals of soil science. Scientific Publishers. Nathanail C. P., Bardos R. P. 2005. Reclamation of contaminated land. John Wiley & Sons.

Supplementary literature: Pansu M., Gautheyrou J. 2007. Handbook of soil analysis: mineralogical, organic and inorganic methods. Springer Science & Business Media.

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 1.00



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Student's independent work: 2.00