
Course title: DEGRADED LAND RECLAMATION

ECTS credit allocation (and other scores): 2.0

Semester: autumn

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. Mariusz Gusiatin, Associate Professor;
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Type of classes: classes and lectures

Substantive content

Lectures: Characteristics of degraded areas. General objectives and principles reclamation. Principles of reclamation and management directions for geomechanically degraded soils. geomechanically degraded soils. Principles and conduct of biological reclamation. Reclamation of chemically degraded soils, with elements of remediation. Reclamation and management of coal and sulfur of coal and sulfur mining. Reclamation and management of sites of mining and processing of non-ferrous metals. Reclamation of post rock mining and industrial waste heaps.

CLASSES: Assessment of the degree of degradation of agriculturally used soils. Classification of formations for reclamation purposes. Design of the external dump and its reclamation. Bioremediation pile design. Soil vapour extraction design.

Learning purpose: Improving knowledge of soil remediation methods in degraded areas degraded sites, with particular emphasis on post-industrial sites.

On completion of the study programme the graduate will gain:

Knowledge: indicators used to assess soil degradation and methods of classifying formations for reclamation methods, the current state of national resources and their extraction, principles of technical and biological reclamation of degraded land, directions and ways of reclamation of degraded lands according to the type of industry.

Skills: assessment of the degree of soil degradation and classification of formations for reclamation purposes, selection of the method of reclamation of degraded lands depending on the type of degradation, calculations of reclamation and remediation of contaminated soils.

Social Competencies: respectation of dangers posed by soil and earth pollution and raises awareness of the importance of rehabilitating brownfield sites

Basic literature:

Singh et al. 2020. A handbook on mine reclamation. Indian Council of Forestry Research and Education.

Pankaj Kumar Gupta, Basant Yadav, Sushil Kumar Himanshu, Advances in Remediation Techniques for Polluted Soils and Groundwater, Elsevier, R. 2021; laboratory handbook

Supplementary literature: ---

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: participation in laboratory classes, consultation (10 h)

Student's independent work: preparation for lab classes and final test, report writing (10 h)