

*Course name* Soil science and recultivation *Code* *Credit points* **3**

*Language of instruction* **English**

*Programme* Intelligent Energy (IE), Biotechnology for Environmental Protection (BI)

*Type of studies* BSc studies

*Unit running the programme* Faculty of Environmental Protection and Engineering  
Institute of Environmental Engineering

*Course coordinator and academic teachers* **Iwona Deska, PhD**

*Form of classes and number of hours*

Semester	Lec.	Tut.	Lab.	Proj.	Sem.	Credit points
V	2	-	2	-	-	3

*Learning outcomes* Understanding the processes and phenomena taking place in the soil environment, and in degraded areas.

*Prerequisites* The basic knowledge of mathematics, physics, biology, chemistry, hydrology, hydrogeology and earth sciences, transport and fate of contaminants in the environment.

*Course description*

**LECTURES:**

Issue of population growth limit and soil resources limits. Types of landscape and instruments of its cultivation. Environmental management and soil protection. Soil formation, processes and soil-forming factors. Soil morphology, genetical levels. Soil as a 3-phase setup. Chemical and physical soil features. Organic matter in soil. Biological soil features. Soil abundance and fertility. Soil as an element of environment. Soil functions. Processes, conditions and effects of soil demotion. Forms of anthropopressure, soil pollution and intoxication. Soil erosion. Concept of reclamation. Reclamation as a part of balanced development realization. Prerequisites and postulates of reclamation. Programming soil protection and improvement. Reclamation principles, directions, phrases and methods. Vegetation as a part of reclamation processes. Evaluation of reclamation.

**TUTORIALS:**

**LABORATORY:**

Estimation of physical and chemical soil properties. Estimation of organic matter

and biological soil properties. Soil monitoring. Selected methods of reclamation. Evaluation of remediation progress. The transport and fate of contaminants in the environment.

**PROJECT:**

**SEMINAR:**

*Form of assessment* credit

- Basic reference materials*
1. F. Maciak: Environmental protection and reclamation. SGGW, Warszawa 1996
  2. J. Skrzypski: Lithosphere - sources and kinds of pollutions, ways of its protection. [in] A. Kurnatowska: Ecology. Its connections with various fields of knowledge. PWN, Warszawa 2002
  3. Alexander M.: Biodegradation and bioremediation. Academic Press, Inc., London 1994.
  4. Norris R.D. et al. (eds): Handbook of Bioremediation, Levis Publ., 1994
  5. Sposito , The chemistry of soils, Oxford Pres 1989; Schlichtind, Blume, Stahr, Bodenkundliches Praktikum, Vien 1995

*Other reference materials*

For Polish-speaking students:

1. Zawadzki S. - Praca Zbiorowa Gleboznawstwo, wyd. IV, PWRiL, Warszawa 1999
2. Zawadzki S. Podstawy Gleboznawstwa, PWRiL, Warszawa 2002
3. Malina G.: Likwidacja zagrożenia środowiska gruntowo-wodnego na terenach zanieczyszczonych, Wydawnictwo Politechniki Częstochowskiej, Częstochowa, 2007
4. Malina G: Remediacja zanieczyszczonych gruntów i wód podziemnych, Monografia. Wydawnictwo Politechniki Częstochowskiej, 2000.
5. Malina G., Szczepański A.: Likwidacja zanieczyszczeń substancjami ropopochodnymi w środowisku wodno - gruntowym. Monografia. PIOŚ Biblioteka Monitoringu Środowiska, Warszawa 1994.
6. Malina G.: Biowentylacja (SBV) strefy aeracji zanieczyszczonych substancjami ropopochodnymi. Monografia, nr 66, Wyd. Politechniki Częstochowskiej, Częstochowa 1999.
7. Miksch K. (red.): Bioremediacja gruntów, Materiały Sympozjum Naukowo -Technicznego, Politechnika Śląska, 1998.

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Average student workload (teaching hours + individ.)	
Remarks:	
Updated on:	28.05.2009