



ЦЕНТЪР ЗА ОБУЧЕНИЕ – БАН

1000 София
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Basic Information:

Course Title: Measurement of hydraulic conductivity of improved soils using a flexible wall permeameter

Lecturer: Prof. Doncho Karastanev, PhD

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Total Teaching Hours: 30 hours theory

Annotation (up to 150 words)

The present educational course is envisaged primarily PhD students in the field of engineering geology and environmental geotechnics, but could be useful for professionals as well whose professional activity is directly related to design and construction of facilities for long-term waste disposal.

The course aims to introduce PhD students in the theoretical foundation of measurements of hydraulic parameters of engineering barriers constructed by stabilized soils. The course focuses especially on the test for measurement of hydraulic conductivity of natural and improved soils using a flexible wall permeameter under steady state regime of filtration. This measurement technique allows most correct determination of the coefficient of filtration of low permeable materials (in the range of $10^{-6} \div 10^{-11}$ m/s) what are used in the construction of engineering barriers in disposal facilities.

Course content (brief description by topics or modules)

30 hours theory

Topic / Module 1: Introduction

Topic / Module 2: Overview of the test

- Equipment components
- Maximum tolerable hydraulic gradient

Topic / Module 3: Specimen preparation and assembly

Topic / Module 4: Specimen saturation and consolidation

Topic / Module 5: Constant head tests

Teaching and assessment methods

Teaching method: Theory lectures

Assessment method: Test

Competencies acquired as a result of training (3–5 points)

1. Understanding Darcy's law and hydraulic conductivity
2. Skills to conduct analyze and interpret results from laboratory tests to determine the permeability coefficient of low-permeable materials
3. Learn standard techniques for geotechnical laboratory testing
4. Familiarity with international standards



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Literature:

ASTM D5084-24 Standard test methods for measurement of hydraulic conductivity of saturated porous materials using a flexible wall permeameter

BDS EN ISO 17892-11:2019 Geotechnical investigation and testing - Laboratory testing of soil - Part 11: Permeability tests (ISO 17892-11:2019)

BS 1377-6:1990 Methods of test for soils for civil engineering purposes. Consolidation and permeability tests in hydraulic cells and with pore pressure measurement.