Joint Doctoral Programme “Geo-Engineering and Water Management”

POSTGRADUATE STUDY: Joint Doctoral Programme Geo-Engineering and Water Management

COURSE TITLE: GROUND PROFILE CHARACTERIZATION (3 ECTS-Credits)

COURSE STATUS: Optional course (OG1), Summer School 2017 in Vienna

LECTURER’S: Rainier Arndt, János Szendefy

COURSE DESCRIPTION:

Introduction
- Common geophysical methods and their use in ground profile characterizations
- Special Focus – Applied Engineering Seismics (refraction-, reflection-, hybrid seismic, MASW)

Defining Acquisition Parameters
- Resolution, operational constraints, target geometry, depth considerations, and: economics!
- Design of an acquisition plan
- Call for tenders and bid evaluations, choosing the right sub-contractor

Field works & Data Processing
- Operational preparations, scheduling, additional costs
- Quality control of operations and collected field data
- The SEG-Y files and their subsequent data processing

Reporting & Results
- How to read and understand seismograms?
- Basics of interpretation – did the survey answered my questions?
- Pitfalls, short comings, and ambiguities

Case Studies & Exercises
- Get the findings: how to read and understand seismograms
- Understanding and integrating geophysical reports into the geotechnical project
- Is a seismic survey always the silver bullet?

Ground investigation with drillings and soundings:
- Introduction of technology of drillings and sampling.
- Introduction of technology of different types of sounding (DP, SPT, VST, CPT, PMT).
- Investigation strategies and design of investigation programs with respect to the geological conditions and objectives.
- Analyse the results. Comparing the result of core samples and soundings.

Rock mass classification and characterization
- Rock mass properties in the field, evaluation of important parameters

Hydrogeological behaviour of soils and rocks:
- Porosity, storage coefficient, permeability, transmissivity,
- Evaluation methods for hydrogeological Parameters (pumping tests, injection tests, slug test, recovery, well equation and Lugeon test)

DEVELOPMENT OF GENERAL AND SPECIFIC COMPETENCIES

With only 1/3 of all geophysical surveys delivering products fully useable and impact rich for the geotechnical / geotechnical projects the question surfaces – why do geophysical methods impact so little commercial geotechnical endeavours? This course presents a sequence through the process of designing geophysical investigations for on site characterisations and geo-engineering. As outcome, participants will also learn to define quality standards for geophysical surveys.
Advanced understanding of ground investigation methods, drillings, soundings, surface geophysics and hydrogeological procedures. Understanding of rock mass characterization and hydrogeological behaviour of soils and rocks.

**RECOMMENDED LITERATURE (with detailed data on publisher and year of publication):**


**QUALITY ASSURANCE METHODS:**

An anonymous questionnaire will be filled in by all of the course participants. This procedure is compulsory for all subjects and is aimed at evaluation both of the teacher's performance (quality of delivery) and of the overall content and structure of the course.