

Прилог 6.1. Универзитет у Атини, Грчка (National Technical University of Athens, Department of Geotechnical Engineering, School of Civil Engineering, NTUA, Greece, <http://www.civil.ntua.gr/geotech>)

Department of GEOTECHNICAL ENGINEERING

School of Civil Engineering - NTUA

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Geology for Engineers

Geology and mineralogy and behaviour of geological materials and land subsidence and hydrogeology.

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5th semester – School of Civil Engineering

Geodynamics and structural geology, elements of geomorphology, principles of engineering geology, geological hazards. Earthquakes, landslides and aspects of construction materials, principles of

Instructors: P. Marinou, G. Tsiambaos

Soil Mechanics I (5th semester– School of Civil Engineering)

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Introduction, applications of soil mechanics in civil engineering. The nature of soil, types of soil, density, water content, Atterberg limits, subsurface soil investigation. Stresses and strains in soil elements, description of the stress state at a point with the Mohr circle, total and effective stresses, the "effective stress principle", geostatic stresses and stress changes due to externally applied loads (under plane strain and axisymmetric conditions). Phenomenological and microscopic description of soil deformation mechanisms. The triple role of the fluid phase. Stress-strain relationships under different loading conditions: one-dimensional compression, cylindrical (tri-axial) compression, simple shear, torsion. Shear strength of a soil element, Mohr-Coulomb failure criterion. Undrained loading: excess pore pressure, stress-strain relations under various loading conditions, undrained shear strength of soils. Laboratory: Demonstration of common soil mechanics tests used to determine physical and mechanical properties.

Instructors: G. Bouckovalas, M. Kavvas, V.N. Georgiannou, N. Gerolymos

Soil Mechanics II (6th semester– School of Civil Engineering)

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Application of elastic continuum theory: stresses and strains in soil masses under external loading. Plane-strain and axis-symmetric loading. The St. Venant principle. Horizontal earth pressures under different loading conditions. Rankine and Coulomb methods. Gravity retaining walls. The role of elastic deformations. Retaining structures of the Athens metro stations. Limit equilibrium methods in soil mechanics. Slope stability under drained and undrained conditions. Ultimate

load of foundation (bearing capacity). Ground water flow in one dimension. Evolution in time of excess pore water pressures and consolidation of a clay layer due to vertical external loading . Seismic Liquefaction.

Instructors: G. Gazetas, I. Protonotarios, V.N. Georgiannou, N. Gerolymos

Engineering Geology (6th semester– School of Civil Engineering)

Engineering geology in the field of geotechnical engineering. Engineering behaviour of rock and rock masses, rock mass description. Site investigation, presentation of data and geological information processing. Geology and engineering structures, rock excavations and slopes, foundation on rocks, dams, tunnels and underground construction. Selected subjects of ground-water hydrology. Engineering description and case histories from Greek geology. Selected topics in environmental geology.

Instructors: P. Marinos, G. Tsiambaos