Subject Name: SOIL MECHANICS 3 (2+1)

KEYWORDS

(Name of Course Developer: Prof. K. Deb, Civil Engg. Department, IIT Kharagpur, Kharagpur – 721 302)

Module 1: Fundamentals of Soil Mechanics

Keywords: Soil formation, soil type, phase diagram, important relationships, index properties of soil, Grain size distribution, Atterberg Limits, Unified Soil Classification System, AASHTO Soil Classification System, IS Classification System

Module 2: Stress and Strength

Keywords: Effective stress, stress calculation in soil, Boussinesq's analysis, Westergaard's analysis, stress under line load, strip load, uniformly loaded rectangular area, uniformly loaded circular area, NewMark's influence chart, shear strength, shear resistance, Mohr Circle, Mohr-Coulomb Failure Criterion, effective stress principle, shear strength parameters, direct shear test, unconfined compression test, tri-axial tests, stress path

Module 3: Compaction, Seepage and Consolidation of Soil

Keywords: Compaction of soil, standard and modified protector test, factors affecting compaction, field compaction of cohesionless soil, filed compaction of cohesive soil, field control of compaction, coefficient of permeability, permeability in layered soil, factors affecting permeability, measurement of permeability, constant head test, falling head test, unconfined and confined flow pumping test, seepage, Laplace's Equation, flow net, seepage in anisotropic soil, seepage in non-homogeneous section, consolidation, factors affecting consolidation, Terzaghi's theory of one dimensional consolidation, laboratory consolidation test, coefficient of consolidation determination.

Module 4: Earth Pressure, Slope Stability and Soil Exploration

Keywords: Earth pressure, Rankine's Theory, earth pressure for c-ϕ soils, slope stability of slopes, Infinite and finite slopes, friction circles method, soil exploration, boring, soil samples, Standard Penetration Test, Dynamic Cone Penetration Test, Static Cone Penetration Test, spacing of boring, depth of boring, number of boreholes.