

SOIL MECHANICS

Code:CE403

CONTACT-3L+1T

CREDITS-4

Module 1

Introduction: Origin & formation of Soil: Types, Typical Indian Soil, Fundamental of Soil Structure, Clay Mineralogy [2]

Module 2

Physical & Index properties of soil: Weight- Volume Relationships, Insitu Density, Moisture Content, Specific Gravity, Relative Density, Atterberg's Limits, Soil Indices, consistency of soil, Particle Size Distribution of soil: Sieving, Sedimentation Analysis [6]

Module 3

Identification & Classification of soil: Field identification of soil, Soil Classification: as per Unified Classification System, IS Code Recommendation, AASHTO Classification [4]

Module 4

Flow through soil: Darcy's Law, Coefficient of permeability, laboratory and field determination of coefficient of permeability, Permeability for Stratified Deposits, Laplace's Equations, Flow nets, Flow Through Earthen Dam, Estimation of Seepage, Uplift due to seepage [6]

Module 5

Effective Stress Principles: Effective Stress, Effective pressure due to different conditions, Seepage force, Critical hydraulic gradient, Quick sand condition, Design of filters, Capillarity in soil [4]

Module 6

Stress Distribution In Soil: Normal and shear stresses, Stress due to point loads, Stress beneath Line, strip & uniformly loaded circular area & rectangular area, pressure bulbs, Newmark's charts- Use for determination of stress due to arbitrarily loaded areas [4]

Module 7

Compaction of soil: Principles of Compaction, IS Light & Heavy Compaction Test, Field Compaction, Various methods of field compaction and control [4]