CE 206: GEOTECHNICAL ENGINEERING - I (3- 0- 0:3)

Soils

Origin and types, Identification and classification of soils, Index properties, phase relationship, consistency, sensitivity, clay mineralogy.

Seepage

Darcy's law of permeability, Determination of Coefficient of permeability, Equivalent permeability for stratified soil, Flow nets – principles, construction and application, Effective stress analysis, quick sand condition, piping, filtration criteria.

Compaction

Principle of compaction, Light and heavy compaction, field compaction control, factors affecting compaction. Compressibility and Consolidation: Terzagli's theory of one-dimensional consolidation, Secondary Consolidation, estimation of consolidation settlement.

Shear Strength of Soil

Strength envelope, total and effective stress paths, pore pressure, evaluation of shear strength parameters, direct shear, triaxial shear, vane shear, unconfined compression test.

Lateral Earth Pressure

Earth pressure at rest, active and passive earth pressure, Rankine and Coulomb's earth pressure theories, Graphical Solutions.

Stability of Slope

Stability of infinite slope, stability of finite slope, slope protection.

Text Books

1. Gopal Ranjan and Rao, A.S.R., "Basic and Applied Soil Mechanics", New Age International.
2. Terzaghi K., Peck R. B. and Mesri G., "Soil Mechanics in Engineering Practice", John Wiley & Sons

References

1. Kaniraj S.R., "Design Aids in Soil Mechanics & Foundation Engineering", Tata McGraw Hill.
2. Lambe T.W and Whitman R.V., "Soil Mechanics", John Wiley & Sons.
3. Punmia B.C., "Soil Mechanic and Foundation Engineering", Laxmi Publication Pvt. Ltd.
4. Braja M. Das., "Fundamental of Foundation Engineering", Thomson Asia Pvt. Ltd, Singapore.