

3. Ground Water and Flow Through Porous Media (Cr = 04)

Soil Water: Modes of occurrence of water in soils. Adsorbed water, capillary water, Capillary potential, capillary tension and soil suction. Effective and Neutral pressures in soil; Flow through porous Media: Darcy's law and measurement of permeability in laboratory and field. Steady State flow solutions of Laplace's equation, Plane problems, 3-dimensional problems, Partial cut-offs, uplift pressure, consolidation theory: one and three dimensional consolidation, Secondary consolidation. Ground water Hydraulics: Water table in regular materials, Geophysical exploration for locating water table. Confined water, Equilibrium conditions, Non-equilibrium conditions, Water withdrawal from streams, Method of ground water imaging.

References:

1. D.K.Todd, *Groundwater Hydrology*, John Wiley and Sons
2. H. M. Raghunath, *Ground Water*, Willy Eastern Ltd.
3. C. Fitts, *Ground Water Science*, Elsevier Publications, U. S. A.
4. P. P. Raj, *Geotechnical Engineering*, Tata McGraw-Hill
5. A. Jumikis, *Soil Mechanics*, East West Press Pvt Ltd.