

# GEOTECHNICAL ENGINEERING

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**MODULE -III: STRESS DISTRIBUTION IN SOILS AND COMPACTION (9)**

Capillary rise, flow of water through soils, Darcy's Law, Permeability, Factors affecting permeability, Laboratory & field tests for determination of coefficient of permeability.

Permeability of layered soils. Total, neutral and effective stress, upward & downward seepage through soils, quick sand condition, flow nets: characteristics and uses.

**MODULE -IV: CONSOLIDATION (10)**

Types of compressibility, immediate settlement, primary consolidation and secondary consolidation, stress history of clay, e-p and e-log p curves, normally consolidated soil, over and under consolidated soil, pre-consolidation pressure and its determination, Terzaghi's 1-D consolidation theory, coefficient of consolidation square root time and logarithm of time fitting methods, computation of total settlement and time rate of settlement.

**MODULE -V: SHEAR STRENGTH OF SOILS (8)**

Importance of shear strength, Mohr's-Coulomb failure theories, types of laboratory tests for strength parameters, strength tests based on drainage conditions, strength envelopes, shear strength of sands, dilatancy, critical void ratio, liquefaction, shear strength of clays.

**V. TEXT BOOKS:**

1. Braja M. Das, "Principles of geotechnical engineering" Cengage Learning Publishers, 2002.
2. VNS Murthy, "Soil Mechanics and Foundation Engineering", CBS publishers and distributors, 2003.
3. Gopal Ranjan and ASR Rao, "Basic and Applied Soil Mechanics", New age international Pvt. Ltd, New Delhi, 2000.

**VI. REFERENCE BOOKS:**

1. C. Venkataramiah, "Geotechnical engineering", New Age International Pvt. Ltd, 2002.
2. Manojdutta and Gulati, "Geotechnical Engineering", Tata McGraw hill publishers New Delhi, 2005.
3. K.R .Arora, "Soil Mechanics and Foundation Engineering", Standard Publishers and distributors, New Delhi, 2005.
4. B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, "Soil mechanics and foundation", Laxmi publications Pvt. Ltd, New Delhi, 2005.

**VII. WEB REFERENCES:**

1. <http://nptel.ac.in/courses/105107120/1#>
2. <http://www.nptel.ac.in/courses/105105105/>
3. <http://www.nptel.ac.in/courses/105105104>

**VIII. E-TEXT BOOKS:**

1. <https://onlinelibrary.wiley.com/doi/book/10.1002/9781118686195>