

GL 1661.4 Geotechnical Investigation and Soil Testing

Sector/ Industry : Construction, Land Use Planning

Placement opportunities: Organizations related to civil constructions, Geotechnical and soil testing industry, Land use planning, Agriculture and Soil conservation

Unique Skills: Soil testing, Soil Analysis, Ground modification

Training institutes : College of Engineering, Thiruvananthapuram, Kerala Highway Research institute (KHRI).

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CO1: Understand types of soil

CO2: Evaluate soil quality

CO3: Understand soil testing methods

CO4: Understand different ground modification methods

Unit-1 Soil Formation, types of soils, physical and biological weathering, soil transport, deposition and stratification phenomena and Soil Classification.

Unit-2 : Exploration Methods: Methods of Boring, Augering and Drilling. Machinery used for drilling, types of augers and their usage for various projects.

Unit-3: Soil Sampling: sampling methods, types of samples, storage of samples and their transport. Sample preparation, sample sizes, types of samplers specifications for testing.

Unit-4: Field testing of soils: methods and specifications – visual identification tests, vane shear test, penetration tests, analysis of test results. Report writing: Soil exploration Reports- identification, calculations and preparation. Field Instrumentation: Rollers, Pressure meters, Piezometer, Pressure cells, Sensors, Inclinometers, Strain gauges etc.

Unit-5: Introduction to Ground Modification: Need and objectives of Ground Improvement, Classification of Ground Modification Techniques – suitability and feasibility, Emerging Trends in ground improvement.

References :

1. J. E. Bowles, "Foundation Analysis and Design", McGraw Hill Companies, 1997.
2. M. D., Desai, "Ground Property Characterization from In-Situ Testing", Published by IGS-Surat Chapter, 2005.
3. M. J., Hvorslev, "Sub-Surface Exploration and Sampling of Soils for Civil Engineering Purposes", US Waterways Experiment Station, Vicksburg, 1949.
4. Robert M. Koerner "Construction and Geotechnical methods in Foundation Engineering", Mc.Graw-Hill Pub. Co., New York, 1985.
5. Manfred R. Haussmann, "Engineering principles of ground modification", Pearson Education Inc. New Delhi, 2008.
6. F. G., Bell, "Engineering Treatment of Soils", E& FN Spon, New York, 2006..
7. P. Purushothama Raj, " Ground Improvement Techniques" Laxmi Publications (P) Limited, 2006.
8. Jie Han et. al., "Advances in ground Improvement" Allied Pub., 2009.
9. Hunt Roy E , Geotechnical Investigation Methods, A Field Guide for Geotechnical Engineers, Taylor & Francis Ltd