

Course syllabus

Department of Civil Engineering, Indian Institute of Technology Madras

CE5370 – Geotechnics for infrastructure

Credit Distribution: C:9 L:3 T:0 P:0 E:0 O:6 TH:0

Course Type: Theory

Description:

To introduce the application of geotechnical engineering to various infrastructure projects

Course Content:

Introduction: Infrastructure projects, importance of geotechniques in infrastructure projects;
Reconnaissance/site selection: Factors affecting site selection, geophysical surveys, guidelines for soil investigation, Foundations for Industrial Plants: Heavy and settlement sensitive structures, Tall chimney/Tower, Machine foundations, Oil storage tanks, Underground pipelines/Conduits, Deep excavations/Dewatering, Ground anchors, Compound walls; Port Infrastructure: Break waters, Berthing structures – pile supports-diaphragm walls-caisson/monolith; Transport infrastructure: Embankment for Rail/Road, Bridge foundations/Abutment/Approaches, Tunneling, Water Resources: Dams and dam foundations, Canals, Underground Tanks, River Intake structures/Infiltration galleries, RWH; Environmental systems: solid waste landfill, Effluent treatment plant, Sea outfall; Industrial waste utilization and disposal- tailing ponds; Land reclamation: In water, in swamp area, selection of borrow soil, methods of placement, compaction, monitoring.

Text Books :

1. Bowles, J. E. (1988). Foundation Analysis and Design. McGraw-Hill, New York, USA. 2. Tomlinson, M. J. (1986). Foundation Design and Construction., English Language Book Society, Longman Group Ltd., Singapore. 3. Wintercorn, H. F. and Fang, H. (Ed.) (1975). Foundation Engineering Handbook. Van Nostrand Reinhold Company, N. Y., USA. 4. Peurifoy, R. L. Ledbetter, W. B., and Schexnayder, C. J. (1996). Construction planning, equipment and methods, McGraw Hill, Singapore.

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Prerequisite: NIL