

B. E. CIVIL ENGINEERING Choice Based Credit System (CBCS) and Outcome Based Education (OBE) SEMESTER - VII GEOTECHNICAL ENGINEERING LABORATORY			
Course Code	18CVL77	CIE Marks	40
Teaching Hours/Week(L:T:P)	(0:2:2)	SEE Marks	60
Credits	02	Exam Hours	03
Course Learning Objectives: This course will enable students to; <ol style="list-style-type: none"> 1. To carry out laboratory tests and to identify soil as per IS codal procedures 2. To perform laboratory tests to determine index properties of soil 3. To perform tests to determine shear strength and consolidation characteristics of soils 			
Modules			
1. Field identification of soil, Specific gravity test (pycnometer and density bottle method). Water content determination by oven drying and Pycnometer method, rapid moisture meter method.			
2. Grain size analysis <ol style="list-style-type: none"> i. Sieve analysis ii. Hydro meter analysis 			
3. In-situ density tests <ol style="list-style-type: none"> i. Core-cutter method ii. Sand replacement method 			
4. Consistency limits <ol style="list-style-type: none"> i. Liquid limit test (by Casagrande's and cone penetration method) ii. Plastic limit test iii. Shrinkage limit test 			
5. Standard compaction test (light and heavy compaction)			
6. Co-efficient of permeability test <ol style="list-style-type: none"> i. Constant head test ii. Variable head test 			
7. Shear strength tests <ol style="list-style-type: none"> i. Unconfined compression test ii. Direct shear test iii. Triaxial test (unconsolidated undrained test only) 			
8. Consolidation test :To determine pre consolidation pressure only(half an hour per loading-test).			
9. Laboratory vane shear test			
10. Demonstration of Swell pressure test, Standard penetration test and boring equipment			
Course outcomes: Students will be able to conduct appropriate laboratory/field experiments and interpret the results to determine <ol style="list-style-type: none"> 1. Physical and index properties of the soil 2. Classify based on index properties and field identification 3. To determine OMC and MDD, plan and assess field compaction program 4. Shear strength and consolidation parameters to assess strength and deformation characteristics 5. In-situ shear strength characteristics (SPT-Demonstration) 			
Question paper pattern: <ul style="list-style-type: none"> • All experiments are to be included in the examination except demonstration exercises. • Candidate to perform experiment assigned to him. • Marks are to be allotted as per the split up of marks shown on the cover page of answer script. 			
Reference Books:			
<ol style="list-style-type: none"> 1. Punmia B C, Soil Mechanics and Foundation Engineering-(2017), 16th Edition, Laxmi Publications co., New Delhi. 2. Lambe T.W., "Soil Testing for Engineers", Wiley Eastern Ltd., New Delhi. 3. Head K.H., "Manual of Soil Laboratory Testing" Vol. I, II, III, Princeton Press 4. Bowles J.E., "Engineering Properties of Soil and Their Measurements", -McGraw Hill Book Co. New York. 5. Relevant BIS Codes of Practice: IS-2720 series 			


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