19CE3453- GEOTECHNICAL ENGINEERING LAB

Course Category:	Program Core	Credits:	1.5
Course Type:	Laboratory	Lecture-Tutorial-Practical:	0-0-3
Prerequisites:	19CE3402- Environmental Engineering 19BS1102- Chemistry of Materials	Continuous Evaluation:	25
		Semester End Evaluation:	50
		Total Marks:	75

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	**Determine** index soil properties and understand their significance and application	K3
CO2	**Determine** basic soil properties and understand their significance and application	K3
CO3	**Determine** engineering soil properties and understand their significance and application	K3
CO4	**Determine** compaction & consolidation characteristics and understand their significance and application	K3
CO5	**Determine** strength characteristics and understand their significance and application	K3

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			3	3									3	3
CO2			3	3									3	3
CO3			3	3									3	3
CO4			3	3									3	3
Avg.			3	3									3	3

1- Low **2-Medium** **3-High**

Course Content

Experiment No.1	**Determine Atterberg's limits** Liquid Limit Test Plastic Limit Test Shrinkage Limit Test	CO1
Experiment No.2	**Investigate dry density of soil** Core cutter method Sand Replacement method	CO1
Experiment No.3	**Conduct grain size analysis of coarse grade and fine grade soils** Dry Sieve Analysis Wet Sieve Analysis Hydrometer Analysis	CO2
Experiment No.4	**Determine coefficient of permeability** Constant Head Test Falling Head Test	CO2
Experiment No.5	**Measure compaction characteristics of soil** Standard Proctor Test Modified Proctor Test	CO3
Experiment No.6	**Determine engineering properties of consolidation** Consolidation Test	CO3
Experiment No.7	**Measure unconfined compression strength of soil** Unconfined compression test	CO4
Experiment No.8	**Determine shear strength of soil** Direct shear test Vane shear test CBR Test	CO5

Learning Resources	
Text Books	1. Basic and Applied Soil Mechanics – Gopal Ranjan and A.S.R.Rao, New Age International Publishers 2. Soil Mechanics and Foundation Engg (7th edition) by Dr. Arora, K.R., Standard Publisher and Distributors, Delhi, 2010. 3. A Text book of Soil Mechanics and Foundation Engineering – B.C.PunmiaLaxmi Publications
Reference Books	1. Foundation Analysis & Design by Bowles, J.E., McGraw- Hill Book Co. 2. A Text book of Soil Mechanics and Foundation Engineering – P.Purushotthama Raj, Pearson Education 3. Introduction to Soil Mechanics- Braja M Das
e-Resources& other digital material	1. https://nptel.ac.in/courses/105/101/105101201/ 2. http://jntuk-coeerd.in/