

LESSON PLAN

Discipline: Civil Engg.	Semester: Third (3 rd)	Name of the Faculty: Er Ashis Kumar Mohapatra
Subject: Geotechnical Engineering	No. of days per week class allotted: Four (4)	Semester from Date: 15.09.22 to Date: 22.12.22 No. of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	Soil and Soil Engineering.
	2 nd	Scope of Soil Mechanics.
	3 rd	Origin and formation of soil
	4 th	Review class
2 nd	1 st	Soil as a three Phase system
	2 nd	Water Content, Density, Specific gravity Voids ratio, ,
	3 rd	Porosity, Percentage of air voids, air content
	4 th	Degree of saturation, density Index, Bulk ,
3 rd	1 st	Saturated/dry/submerged density
	2 nd	Interrelation of various soil parameter
	3 rd	Problem.1
	4 th	Review class
4 th	1 st	Water Content
	2 nd	Specific Gravity
	3 rd	Particle size distribution ,Sieve analysis
	4 th	Monthly test

5 th	1 st	Wet mechanical analysis
	2 nd	Particle size distribution curve and its uses
	3 rd	Consistency of Soils- Atterberg's Limits ,.
	4 th	Plasticity Index, Consistency Index, Liquidity Index
6 th	1 st	Review class
	2 nd	General. – I.S. Classification
	3 rd	Plasticity chart
	4 th	Review class
7 th	1 st	Concept of Permeability, Darcy's Law, Co-efficient of Permeability.
	2 nd	The factors affecting Permeability
	3 rd	Constant head permeability
	4 th	Falling head permeability Test
8 th	1 st	Problem-1
	2 nd	Problem-2
	3 rd	Problem-3
	4 th	Monthly test
9 th	1 st	Seepage pressure, effective stress phenomenon of quick sand
	2 nd	Review class
	3 rd	compaction, light and heavy compaction test, Optimum Moisture Content of Soil.

	4 th	maximum dry density, zero air void line
10 th	1 st	Factors affecting Compaction.
	2 nd	Field compaction methods and their suitability.
	3 rd	Consolidation, distinction between compaction and consolidation.
	4 th	Terzaghi's model analogy of compression
11 th	1 st	Review class
	2 nd	Concept of Shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction.
	3 rd	Strength envelope for different types of soil.
	4 th	Measurement of shear strength: Direct shear test
12 th	1 st	Monthly test
	2 nd	Triaxial shear test unconfined compression test . vane shear test.
	3 rd	Review class
	4 th	i) Active earth pressure, ii)Passive earth pressure, iii) Earth pressure at rest
13 th	1 st	Use of Rankine's formula for the following cases (cohesion less soil only) i) Backfill with no surcharge, ii)backfill with uniform surcharge
	2 nd	Problem Review class
	3 rd	Functions of foundations. shallow and deep foundation
	4 th	different type of shallow foundations & deep foundation with sketches
14 th	1 st	Types of failure-General shear

	2 nd	Local shear & Punching shear
	3 rd	Bearing capacity of soil, determination of bearing capacity of soils using Terzaghi's formulae & IS code for strip footing
	4 th	Circular footings square footings , Problem Solving
15 th	1 st	Effect of water table on bearing capacity of soil, Plate load test
	2 nd	Standard penetration test
	3 rd	Monthly test
	4 th	Review class