LESSON PLAN OF GEOTECHNICAL ENGINEERING FOR THE SESSION 2022-23 (WINTER-2022) GOVT. POLYTECHNIC, KANDHAMAL , BATCH - 2021-2024.

Discipline: Civil Engineering	Semester : 3rd	Name of the Teaching Faculty: BACHHA SIBA KUMAR DORA
Subject: Geotechnical Engineering	No. of days/ per week class allotted: 4	Semester From Date : 15/09/2022 to Date: 22/12/2022 / 21/01/2023 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		CP.1-Introduction
1ST	1	Introduction
	2	Soil and Soil Engineering
	3	Scope of Soil Mechanics
	4	Origin and formation of soil
		CP2-Preliminary Definitions and Relationship
2ND	1	Soil as a three Phase system
	2	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content
	3	Density Index, Bulk/Saturated/dry/submergdensity, degree of saturation
	4	Interrelationship of various soil parameters
3RD	1	Numericals on Chapter No -2
	2	Numericals on Chapter No -2
		CP3-Index Properties of Soil
	3	Water Content
	4	Specific Gravity
4TH	1	Particle size distribution: Sieve analysis, wet mechanical analysis
	2	Particle size distribution curve and its uses
	3	Consistency of Soils, Atterberg's Limits,
	4	Plasticity Index, Consistency Index, Liquidity Index
5TH	1	Numericals on chapter no 3
	2	Numericals on chapter no 3
		CP4-Classification of Soil
	3	General
	4	I.S. Classification, Plasticity chart
6TH	1	Numericals on chapter no 4
		CP5-Permeability and Seepage
	2	Concept of Permeability, Darcy's Law, Co-efficient of Permeability
	3	Factors affecting Permeability.
	4	Constant head permeability and falling head permeability Test.
7TH	1	Numericals on PERMEABILITY
	2	Numericals on PERMEABILITY
	3	Seepage pressure, effective stress, phenomenon of quick sand
		Compaction and Consolidation
	4	**6.1 Compaction:** Compaction, Light and heavy compaction Test
8TH	1	Optimum Moisture,Content of Soil, Maximum dry density, Zero air void line
	2	Factors affecting Compaction, Field compaction methods and their suitability
	3	Numericals on COMPACTION
	4	Numericals on COMPACTION

9TH		**Consolidation:**
	1	Consolidation ,Distinction brtweeen compaction and consolidation
	2	Terzaghi's model analogy of compression/ springs showing the process
	3	Consolidation – field implications
	4	Numericals on Consolidation
10TH		**Shear Strength**
	1	internal friction,
	2	Strength envelope for different type of soil
	3	Plotting the traverse by coordinate method. Checks for open and closed traverse.
	4	Measurement of shear strength:- Direct shear test,
11TH	1	Triaxial shear test, unconfined compression test and vane-shear test
	2	Numericals on Shear Strength
	3	Numericals on Shear Strength
	4	Numericals on Shear Strength
12TH		**Earth Pressure on Retaining Structures**
	1	Active eath pressure ,Passive Earth Pressure.Earth pressure at rest
	2	Use of Rankine's formula for the following cases (cohesion-less soil only)
	3	(i)Backfill with no surcharge, (ii) backfill with uniform surcharge
	4	Numericals on Earth pressure
13TH	1	Numericals on Earth pressure
	2	**Foundation Engineering**
	3	7.6 Reciprocal leveling – principles, methods, numerical problems, precise leveling.
	4	Functions of foundations, shallow and deep foundation
14TH	1	Different type of shallow and deep
	2	Interpretation of contour maps, toposheets.
	3	Types of failure (General shear, Local shear & punching shear)
	4	Types of failure (General shear, Local shear & punching shear)
15TH	1	Bearing capacity of soils using Terzaghi's formulae numericals
	2	Bearing capacity of soils using Terzaghi's formulae
	3	Formulae and square footings, Effect water table on bearing capacity
	4	Plate load test and standard penetration test

B. Subha Kumar Dora.

15/9/22
HOD.

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