LESSON PLAN			
Deparment: Civil Engineering	Semester : 3rd Sem Sec -A	Name of the Teaching faculty: R.Bhanu	
Subject :- Th1. GEOTECHNICAL ENGINEERING	No.of Days/ week class allotted :03(4periods)	Semester from date: 1/08/2023 to 30/11/2023 Weeks :18 Topics to be covered:-	No. of
Week	Class Day	Topics	Remarks
		1. INTRODUCTION	
1 st Week	1st	1.1 Soil and soil engineering, 1.2 Scope of soil mechanics, 1.3 Origin and formation of soil	
		2.PRELIMINARY DEFINATIONS AND RELATIONSHIP	
	2nd	2.1 Soil as a three phase system	
	3rd	2.1 Soil as a three phase system	
2nd Week	1st	2.2 Water content,Density, Specific gravity, void ratio, porosity, percentage of air void, air content, Degree of saturation, Density index, Bulk/Saturated/Dry/Submerged Density, Interrelationship of various soil parameter.	
	2nd	2.2 Water content,Density, Specific gravity, void ratio, porosity, percentage of air void, air content, Degree of saturation, Density index, Bulk/Saturated/Dry/Submerged Density, Interrelationship of various soil parameter.	
	3rd	2.2 Water content,Density, Specific gravity, void ratio, porosity, percentage of air void, air content, Degree of saturation, Density index, Bulk/Saturated/Dry/Submerged Density, Interrelationship of various soil parameter.	
3 rd Week		**3. INDEX PROPERTIES OF SOIL**	
	2nd	3.1 Water content, 3.2 Specific Gravity	
	3rd	3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses	
4th Week	1st	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index	
		4.Classification of Soil	
	2nd	4.1 General	
	3rd	4.2 I.S. Classification, Plasticity chart	
5th Week	1st	4.2 I.S. Classification, Plasticity chart	
	2nd	4.2 I.S. Classification, Plasticity chart	
	3rd	4.2 I.S. Classification, Plasticity chart	
		5.Permeability and Seepage	
6th Week	1st	5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability,	

6th Week	2nd	5.2 Factors affecting Permeability	
	3rd	5.3 Constant head permeability and falling head permeability Test.	
7th Week	1st	5.3 Constant head permeability and falling head permeability Test.	
	2nd	5.4 Seepage pressure, effective stress, phenomenon of quick sand	
		6.Compaction and Consolidation	
	3rd	6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum MoistureContent of Soil, Maximum dry density, Zero air void line, Factors affecting Compaction, Field compaction methods and their suitability	
8th Week	2nd	6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum MoistureContent of Soil, Maximum dry density, Zero air void line, Factors affecting Compaction, Field compaction methods and their suitability	
	3rd	6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum MoistureContent of Soil, Maximum dry density, Zero air void line, Factors affecting Compaction, Field compaction methods and their suitability	
9th Week	1st	6.2 Consolidation: Consolidation, distinction between compaction and consolidation, Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	
	3rd	6.2 Consolidation: Consolidation, distinction between compaction and consolidation, Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	
10th Week	1st	6.2 Consolidation: Consolidation, distinction between compaction and consolidation, Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	
	2nd	6.2 Consolidation: Consolidation, distinction between compaction and consolidation, Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	

		7.Shear Strength	
11 th Week	1st	7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	
	2nd	7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	
	3rd	7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	
12th Week	1st	7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	
		8.Earth Pressure on Retaining Structures	
	2nd	8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest.	
	3rd	8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest.	
13th Week: (Vacation)		PUJA HOLIDAYS	
14 th Week	1st	8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest.	
	2nd	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)(i) Backfill with no surcharge, (ii) backfill with uniform surcharge	
	3rd	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)(i) Backfill with no surcharge, (ii) backfill with uniform surcharge	

15 th Week	1st	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)(i) Backfill with no surcharge, (ii) backfill with uniform surcharge. **9.Foundation Engineering** : 9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear & punching shear)	
		9.Foundation Engineering	
	2nd	9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear & punching shear)	
	3rd	9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear & punching shear)	
16th Week	1st	9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear & punching shear)	
	2nd	9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear & punching shear)	
	3rd	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil	
17th Week	1st	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil	
	2nd	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil	
	3rd	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil	

18th Week	1st	9.3 Plate load test and standard penetration test	

R. Bhanu 01/08/23

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