

Discipline: CE	Semester: 3rd	Name of the Teaching Faculty: DIBYAJYOTI DASH
Subject: GEOTECHNICAL ENGINEERING	No. of Days/per week class allotted: 04	Semester From Date: 01-08-2023 To Date: 30.11.2023 No. of Weeks : 15
Week	Class Day	Theory Topics
1 st	01	1-Introduction Soil and Soil Engineering
	02	Scope of Soil Mechanics Origin and formation of soil
	03	2-Preliminary Definitions and Relationship Soil as a three Phase system.
	04	Soil as a three Phase system.
2 nd	01	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids,
	02	Air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density
	03	Interrelationship of various soil parameters
	04	Interrelationship of various soil parameters
3 rd	01	3-Index Properties of Soil Water Content
	02	Specific Gravity ,Particle size distribution: Sieve analysis, wet mechanical analysis
	03	particle size distribution curve and its uses
	04	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
4 th	01	4-Classification of Soil General classification
	02	General classification
	03	General Classification
	04	I.S. Classification,
5 th	01	I.S. Classification,
	02	Plasticity chart
	03	5-Permeability and Seepage Concept of Permeability, Darcy's Law
	04	Co-efficient of Permeability
6 th	01	Constant head permeability test
	02	falling head permeability Test.
	03	Seepage pressure
	04	effective stress
7 th	01	phenomenon of quick sand
	02	6-Compaction and Consolidation Compaction, Light and heavy compaction Test
	03	Optimum Moisture Content of Soil, Maximum dry density, Zero airvoid line
	04	Factors affecting Compaction
8 th	01	Field compaction methods and their suitability
	02	7-Consolidation: Consolidation, distinction between compaction and consolidation.

	03	Terzaghi's model analogy of compression/ springs showing the process of consolidation
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9 th	01	field implications
	02	8-Shear Strength Concept of shear strength
	03	Mohr- Coulomb failure theory
	04	Cohesion, Angle of internal friction, strength envelope for different type of soil
10 th	01	Measurement of shear strength;- Direct shear test
	02	Triaxial shear test, unconfined compression test
	03	Vane-shear test
	04	9-Earth Pressure on Retaining Structures Active earth pressure
11 th	01	Passive earth pressure
	02	Earth pressure at rest.
	03	Concept of Rankine's theory
	04	Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge
12 th	01	(ii) backfill with uniform surcharge
	02	(ii) backfill with uniform surcharge
	03	10-Foundation Engineering Functions of foundations
	04	shallow and deep foundation
13 th	01	different type of shallow and deep foundations with sketches
	02	Types of failure (General shear)
	03	Local shear failure
	04	Punching shear failure
14 th	01	Bearing capacity of soil
	02	Bearing capacity of soil using Terzaghi's formulae
	03	IS Code formulae for strip
	04	IS Code formulae for Circular and square footings
15 th	01	Effect water table on bearing capacity of soil
	02	Effect water table on bearing capacity of soil
	03	Plate load test
	04	standard penetration test