ACADEMIC SESSION : 2022-23

Discipline : CIVIL ENGG	**Semester : 3RD**	**Name of the Teaching Faculty : DEBASIS LENKA**
Subject : GEOTECHNICAL ENGG	No. of days / week class allotted	Semester From date: 1ST : 15/09/2021 to 22/12/2022 Nos. of Weeks per semester : 14
Week	**Class Day**	**Theory/ Practical Topics**
1ST	1st	Soil and Soil Engineering
	2nd	Scope of Soil Mechanics , Origin and formation of soil
	3rd	Soil as a three Phase system.
	4th	Water Content, Density, Specific gravity, Voids ratio, Porosity
2ND	1st	Percentage of air voids, air content
	2nd	degree of saturation, density Index, Bulk/Saturated/dry/submerged density
	3rd	Interrelationship of various soil parameters
	4th	-DO-
3RD	1st	Water Content , Specific Gravity
	2nd	Particle size distribution: Sieve analysis,
	3rd	wet mechanical analysis, particle size distribution curve and its uses
	4th	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
4TH	1st	Classification of Soil
	2nd	Classification of Soil
	3rd	I.S. Classification
	4th	I.S. Classification
5TH	1st	Plasticity chart
	2nd	Plasticity chart
	3rd	Concept of Permeability
	4th	Darcy's Law
6TH	1st	Co-efficient of Permeability, Factors affecting Permeability.
	2nd	Constant head permeability
	3rd	falling head permeability Test.

	4th	effective stress
7TH	1st	phenomenon of quick sand
	2nd	Compaction, Light and heavy compaction Test,
	3rd	Optimum Moisture Content of Soil, Maximum dry density
	4th	Zero air void line, Factors affecting Compaction
8TH	1st	Field compaction methods and their suitability
	2nd	Consolidation, distinction between compaction and consolidation.
	3rd	Consolidation, distinction between compaction and consolidation.
	4th	Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications
9TH	1st	Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications
	2nd	Shear Strength
	3rd	Concept of shear strength, Mohr- Coulomb failure theory
	4th	Cohesion, Angle of internal friction, strength envelope for different type of soil
10TH	1st	strength envelope for different type of soil
	2nd	Direct shear test,
	3rd	triaxial shear test
	4th	unconfined compression test and vane-shear test
11TH	1st	Earth Pressure on Retaining Structures
	2nd	Active earth pressure
	3rd	Passive earth pressure,
	4th	Earth pressure at rest.
12th	1st	2 Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge
	2nd	(ii) backfill with uniform surcharge
	3rd	Foundation Engineering
	4th	Functions of foundations, shallow and deep foundation
13th	1st	. different type of shallow and deep foundations with sketche
	2nd	Types of failure (General shear, Local shear & punching shear)
	3rd	Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip,
	4th	Circular and square footings,
14th	1st	Effect water table on bearing capacity of soil

	2nd	Effect water table on bearing capacity of soil
	3rd	Effect water table on bearing capacity of soil
	4th	Plate load test
15th	1st	Plate load test
	2nd	standard penetration test
	3rd	standard penetration test
	4th	NUMERICALS