LESSON PLAN OF 3RD SEMESTERCIVIL ENGINEERING(2023-24)

Discipline :- CIVIL	Semester:-3RD	Name of the Teaching Faculty SOUMYAKANTA SAHOO
Subject:- Geotechnical engineering	No of Days/per Week Class Allotted :-04	Semester From:-**1st August,2023** To:- **30th November,2023** No of Weeks:- **18**
Week	**Class Day**	**Theory/ Practical Topics**
1st	1st	Introduction Soil and Soil Engineering. Scope of Soil Mechanics
	2nd	Preliminary definitions and relationship. Soil as a three Phase system.
	3rd	Weight volume relationships: Water Content ,Density
	4th	Specific gravity,Voids ratio, Porosity,
2nd	1st	Degree of saturation ,Percentage of air voids, air content,
	2nd	Density Index, Bulk/Saturated/dry/submerged density.
	3rd	Water Content (Pycnometer method, Oven drying method)
	4th	Specific Gravity
3rd	1st	Particle size distribution, Sieve analysis, Wet mechanical analysis- Pipette method, Basic concept of Hydrometer Analysis
	2nd	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
	3rd	Classification of soil.
	4th	Particle size Distribution.
4th	1st	Textural Classification.
	2nd	HRB Classification.
	3rd	Unified Soil Classifications
	4th	I.S. Classification.
5th	1st	Concept of Permeability, Darcy's Law
	2nd	Co-efficient of Permeability,
	3rd	Factors affecting Permeability
	4th	Constant head permeability and
6th	1st	Falling head permeability Test
	2nd	Seepage pressure, the phenomenon of quick sand
	3rd	Concept of flow-net, Properties and application of flow-net.
	4th	Compaction, Light and heavy compaction Test
7th	1st	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line
	2nd	Factors affecting Compaction
	3rd	Field compaction methods and their suitability
	4th	Consolidation, distinction between compaction and consolidation
8th	1st	Spring Analogy method, Pressure-void ratio curve, normally consolidated
	2nd	Under consolidated and over consolidated soil, Assumption of Terzaghi's theory of one-dimensional consolidation, Laboratory Consolidation Test
	3rd	Co-efficient of Consolidation, Time Factor, Estimation of consolidation settlement, Difference between primary and secondary consolidation
	4th	Concept of shear strength
9th	1st	Mohr- Coulomb failure theory,
	2nd	Cohesion, Angle of internal friction

	3rd	Strength envelope for different type of soil
	4th	Measurement of shear strength:- Direct shear test,
10th	1st	Triaxial shear test, unconfined compression test and vane-shear test
	2nd	EARTH PRESSURE ON RETAINING STRUCTURES
	3rd	Active earth pressure
	4th	Passive earth pressure,
11th	1st	Earth pressure at rest.
	2nd	Use of Rankin's formula for the following cases (cohesion-less soil only)
	3rd	(i) Backfill with no surcharge,
	4th	(ii) Backfill with uniform surcharge.
12th	1st	(iii) submergedbackfill
	2nd	FOUNDATION ENGINEERING, Functions of foundations,
	3rd	Shallow and deep foundation,
	4th	Different type of shallow and deep foundations with sketches.
13th	1st	Types of failure (General shear, Local shear & punching shear)
	2nd	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings
	3rd	Machine Foundation: Introduction to Soil dynamics, Terms associated with soil dynamics
	4th	Free vibration and Forced vibration, Natural frequency, Types of
14th	1st	Machines and machine foundation, General requirements, Design of machine
	2nd	Foundations: Reciprocating type , Centrifugal type, Impact type,
	3rd	Isolation of foundations.
	4th	PREVIOUS YEAR QUESTION DISCUSSION
15th	1st	PREVIOUS YEAR QUESTION DISCUSSION
	2nd	PREVIOUS YEAR QUESTION DISCUSSION
	3rd	PREVIOUS YEAR QUESTION DISCUSSION
	4th	PREVIOUS YEAR QUESTION DISCUSSION
16th	1st	Numerical problem solving
	2nd	Numerical problem solving
	3rd	Numerical problem solving
	4th	Previous year questions solving
17th	1st	Previous year questions solving
	2nd	Numerical problem solving
	3rd	Numerical problem solving
	4th	Numerical problem solving
18th	1st	REVISION
	2nd	REVISION
	3rd	REVISION
	4th	REVISION