

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN- 2022/23 (WINTER)

Discipline : CIVIL		Semester: 3rd		Name of the Teaching Faculty :SUBINOY BANERJEE		
Subject : GEOTECHNICAL ENGINEERING		No. of Days / per week class allotted : 04		Semester From date : 15.09.2022 To Date : 17.01.2023		
MONTH	Week	Day	Unit	Topics		
SEPTEMBER	3rd	6th	UNIT-I	Introduction		
	4th	1st		Soil and Soil Engineering		
		2nd		Scope of Soil Mechanics		
		3rd		Origin and formation of soil		
				Question Discussion		
	5th	6th	UNIT-II	Preliminary Definitions and Relationship		
		1st		Soil as a three Phase system.		
		2nd		Water Content, Density, Specific gravity, Voids ratio, Porosity		
		3rd		Percentage of air voids, air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density		
	OCTOBER			Interrelationship of various soil parameters		
		1st			Question Discussion	
		3rd		1st	Question Discussion	
	2nd		UNIT-III	Index Properties of Soil		
3rd	Water Content					
6th	Water Content					
4th	1st	Specific Gravity				
	2nd	Particle size distribution: Sieve analysis,wet mechanical analysis				
	3rd	particle size distribution curve and its uses				
	6th	Consistency of Soils, Atterberg’s Limits,Plasticity Index, Consistency Index, Liquidity Index				
5th	2nd	Question Discussion				
	3rd	Question Discussion				
	6th	CLASS TEST-1				
		UNIT-IV		Classification of Soil		
1st	2nd		General, I.S. Classification			
	3rd		Plasticity chart			

NOVEMBER		6th		Question Discussion
	2nd	1st	UNIT-V	Permeability and Seepage
				Concept of Permeability, Darcy's Law, Co-efficient of Permeability
		3rd		Factors affecting Permeability
		6th		Constant head permeability
	3rd	1st		falling head permeability Test
		2nd		Seepage pressure
		3rd		effective stress, phenomenon of quick sand
		6th		Question Discussion
	4th	1st	UNIT-VI	Compaction and Consolidation
				Compaction: Compaction, Light compaction Test
		2nd		heavy compaction Test, Optimum Moisture Content of Soil
		3rd		Maximum dry density, Zero air void line
		6th		Factors affecting Compaction
	5th	1st		Field compaction methods and their suitability
		2nd		Consolidation: Consolidation, distinction between compaction and consolidation
		3rd		Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications
DECEMBER	1st	6th		Question Discussion
	2nd	1st		INTERNAL ASSESSMENT
		2nd	UNIT-VII	Shear Strength
				Concept of shear strength
		3rd		Mohr- Coulomb failure theory, Cohesion, Angle of internal friction
		6th		strength envelope for different type of soil
	3rd	1st		Measurement of shear strength;- Direct shear test
		2nd		triaxial shear test
		3rd		unconfined compression test
		6th		vane-shear test
	4th	1st		Question Discussion
		2nd	UNIT-VIII	Earth Pressure on Retaining Structures
		3rd		Active earth pressure, Passive earth pressure, Earth pressure at rest. Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge (ii) backfill with uniform surcharge

		6th		Question Discussion
JANUARY	1st	1st	UNIT-IX	Foundation Engineering
				Functions of foundations, shallow and deep foundation
		2nd		different type of shallow and deep foundations with sketches
		3rd		Types of failure (General shear, Local shear & punching shear)
		6th		Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings
	2nd	1st		Effect water table on bearing capacity of soil
		2nd		Plate load test, standard penetration test
		3rd		Question Discussion
	3rd	1st		CLASS TEST-2
		2nd		Question Discussion