

# GOVT. POLYTECHNIC MAYURBHANJ

## LESSON PLAN: 2021-22 (WINTER)

Discipline : CIVIL ENGG.		Semester: 3rd		Name of the Teaching Faculty : SUBHASHMITA NAIK			
Subject : GEOTECHNICAL ENGINEERING (TH.2)		No. of Days / per week class allotted : 04		Semester From date : 01.10.2021 Date : 08.01.2022 To			
MONTH	Week	Day	Unit	Topics			
SEPTEMBER	1st	4th	UNIT-I	Introduction			
		5th		Soil and Soil Engineering			
	2nd	1st		Scope of Soil Mechanics			
		2nd		Origin and formation of soil			
		4th		Question Discussion			
				Question Discussion			
	3rd	1st	UNIT-II	Preliminary Definitions and Relationship			
		2nd		Soil as a three Phase system.			
		4th		Water Content, Density, Specific gravity, Voids ratio, Porosity			
				Percentage of air voids, air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density			
				Interrelationship of various soil parameters			
	5th	1st		Question Discussion			
		2nd		Question Discussion			
		4th		4th	UNIT-III	Index Properties of Soil	
			5th	Water Content			
	5th		Water Content				
			Specific Gravity				
		OCTOBER	1st	5th		UNIT-III	Particle size distribution: Sieve analysis,wet mechanical analysis
	2nd		1st	particle size distribution curve and its uses			
2nd			Consistency of Soils, Atterberg's Limits,Plasticity Index, Consistency Index, Liquidity Index				
4th			Question Discussion				
5th			Question Discussion				
3rd	1st		UNIT-IV	CLASS TEST-1			
	4th			Classification of Soil			
				General, I.S. Classification			
5th				I.S. Classification			
	Plasticity chart						
	5th			1st	Question Discussion		
2nd			Question Discussion				
4th			Question Discussion				
5th	1st			Permeability and Seepage			
	2nd			Concept of Permeability, Darcy's Law, Co-efficient of Permeability			
	4th	Factors affecting Permeability					
				Constant head permeability			



NOVEMBER	1st	5th	UNIT-V	falling head permeability Test
		1st		Seepage pressure
		2nd		effective stress, phenomenon of quick sand
		4th		flow net
		5th		Question Discussion
	2nd	1st	UNIT-VI	Question Discussion
		2nd		Compaction and Consolidation
		4th		Compaction: Compaction, Light compaction Test
		5th		
	3rd	1st		heavy compaction Test, Optimum Moisture Content of Soil
		2nd		Maximum dry density, Zero air void line
		4th		Factors affecting Compaction
				Field compaction methods and their suitability
	4th			Consolidation: Consolidation, distinction between compaction and consolidation
		1st		Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications
		2nd		Question Discussion
		4th		Question Discussion
		5th		INTERNAL ASSESSMENT
	5th	1st	UNIT-VII	Shear Strength
		2nd		Concept of shear strength
DECEMBER	1st	4th		Mohr- Coulomb failure theory, Cohesion, Angle of internal friction
		5th		strength envelope for different type of soil
	2nd	1st		Measurement of shear strength;- Direct shear test
		2nd		triaxial shear test
		4th		unconfined compression test
		5th		vane-shear test
	3rd		UNIT-VIII	Question Discussion
				Question Discussion
		1st		Earth Pressure on Retaining Structures
		2nd		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
		4th		(ii) backfill with uniform surcharge
	4th	5th		Question Discussion
				Question Discussion
		1st	UNIT-IX	Foundation Engineering
		2nd		Functions of foundations, shallow and deep foundation
		4th		different type of shallow and deep foundations with sketches
		5th		Types of failure (General shear, Local shear & punching shear)
				Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings
		1st		Effect water table on bearing capacity of soil

JANUARY	5th	2nd	Plate load test, standard penetration test
		4th	Question Discussion
		5th	CLASS TEST-2
	2nd	1st	Question Discussion
			Revision
		2nd	Revision
		4th	Revision
		5th	Revision
	3rd	1st	Previous year question discussion
		2nd	Previous year question discussion
		3rd	Previous year question discussion

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