



# GANDHI SCHOOL OF ENGINEERING

BHABANDHA, BERHAMPUR

BRANCH- CIVIL ENGINEERING

SEMESTER- 3RD

SUBJECT- Th2. GEOTECHNICAL ENGINEERING


NAME OF THE FACULTY- ER. MANJULA BHUYAN

		Topic to be taken			Actual topic taken			
Sl. No	Topic/ Module	No. of period	Details of the topics	Date	Topic No.	Topic Name	Date	Remarks
1	Introduction	2	1.1 Soil and Soil Engineering 1.2 Scope of Soil Mechanics 1.3 Origin and formation of soil	15.09.2022 - 16.09.2022	1.1 1.2 1.3	Soil and Soil Engineering Scope of Soil Mechanics Origin and formation of soil	16.09.2022 19.09.2022	
2	Preliminary Definitions and Relationship	6	2.1 Soil as a three Phase system. 2.2 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	19.09.2022 - 26.09.2022	2.1 2.2	Soil as a three Phase system. 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	20.09.2022 21.09.2022 23.09.2022 26.09.2022 27.09.2022 28.09.2022	

3	Index Properties of Soil	4	3.1 Water Content 3.2 Specific Gravity 3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses 3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index	27.09.2022 - 30.09.2022	3.1 Water Content 3.2 Specific Gravity 3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses 3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index	30.09.2022 07.10.2022 10.10.2022  11.10.2022	
4	Classification of Soil	6	4.1 General 4.2 I.S. Classification, Plasticity chart	06.10.2022 - 13.10.2022	4.1 General  4.2 I.S. Classification, Plasticity chart	12.10.2022 14.10.2022 17.10.2022 18.10.2022 19.10.2022 21.10.2022	
5	Permeability and Seepage	7	5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability, 5.2 Factors affecting Permeability. 5.3 Constant head permeability and falling head permeability Test. 5.4 Seepage pressure, effective stress, phenomenon of quick sand	14.10.2022 - 22.10.2022	5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability, 5.2 Factors affecting Permeability. 5.3 Constant head permeability and falling head permeability Test. 5.4 Seepage pressure, effective stress, phenomenon of quick sand	26.10.2022 28.10.2022 01.11.2022 02.11.2022 04.11.2022 09.11.2022 11.11.2022	

6	Compaction and Consolidation	8	6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum Moisture Content of Soil, Maximum dry density, Zero air void line, Factors affecting Compaction, Field compaction methods and their suitability 6.2 Consolidation: Consolidation, distinction between compaction and consolidation. Terzaghi's model analogy of compression/springs showing the process of consolidation – field implications	23.10.2022 - 02.11.2022	6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum Moisture Content of Soil, Maximum dry density, Zero air void line, Factors affecting Compaction, Field compaction methods and their suitability Consolidation: Consolidation, distinction between compaction and consolidation. 6.2 Terzaghi's model analogy of compression/springs showing the process of consolidation – field implications	14.11.2022 15.11.2022 16.11.2022 18.11.2022  21.11.2022 22.11.2022 23.11.2022 25.11.2022	
7	Shear Strength	8	7.1 Concept of shear strength, Mohr-Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	03.11.2023 - 10.11.2023	7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction, strength envelope for different type of soil, Measurement of shear strength;- Direct shear test, triaxial shear test, unconfined compression test and vane-shear test	02.12.2022 06.12.2022 07.12.2022 08.12.2022 09.12.2022 16.12.2022	
8	Earth Pressure on Retaining Structures	6	8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest. 8.2 Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge, (ii) backfill with uniform surcharge	11.11.2022 - 21.11.2022	8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest. 8.2 Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge, (ii) backfill with uniform surcharge	23.12.2022  04.01.2023 10.01.2023	

9	Foundation Engineering	7	<p>9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear &amp; punching shear)</p> <p>9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae &amp; IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil</p> <p>9.3 Plate load test and standard penetration test</p>	22.11.2022 - 07.12.2022	<p>9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches. Types of failure (General shear, Local shear &amp; punching shear)</p> <p>Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae &amp; IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil</p> <p>9.2 Plate load test and standard penetration test</p> <p>9.3</p>	12.01.2023 14.01.2023	
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 HOD  
 Civil Engg.  
 Gandhi School of Engg.  
 Berhampur (Gm.)

Signature & Stamp of HOD