LESSION PLAN OF TH-2. GEOTECHNICAL ENGINEERING FOR 3RD SEM, CIVIL ENGG, WINTER 2024 W.E.F. 01.07.2024

Faculty Name- Bijaylaxmi Sahoo

WEEK NO.	TOPIC	PERIODS ASSIGNED PER TOPIC	PERIODS AVAILABLE PER WEEK
W-1	**1 Introduction** 1.1 Soil and Soil Engineering 1.2 Scope of Soil Mechanics 1.3 Origin and formation of soil	2	2
W-2	**2 Preliminary Definitions and Relationship** 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	6	4
W-3			2
W-3	**3 Index Properties of Soil** 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	4	2
W-4			2
W-4	**4 Classification of Soil** 4.1 General 4.2 I.S. Classification, Plasticity chart	6	2
W-5			4
W-6	**5 Permeability and Seepage** 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	7	4
W-7			3
W-7	**6 Compaction and Consolidation** 6.1 Compaction: Compaction, Light and heavy compaction Test, Optimum Moisture Content of Soil, Maximum dry density, Zero air void line, Factors affecting	8	1+2 EC
W-8	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		4+1 EC
W-9	**7 Shear Strength** 7.1 Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of		4

W-10	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	6	2
W-11	**8 Earth Pressure on Retaining Structures** 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	7	2+2 EC 3
W-12 W-13 W-14	**9 Foundation Engineering** 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 & punching shear) 9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings, Effect water table on bearing capacity of soil 9.3 Plate load test and standard penetration test	14	1+2 EC 4 4 3
W-15	**DISCUSSION & REVISION**	–	–

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Faculty Signature

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HOD
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