

Lesson Plan

Course - Geotechnical Engineering (Th-4)

Semester- 3rd

Program- Civil Engineering

Institute - Govt. Polytechnic, Sonpur

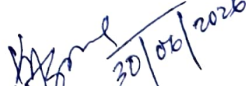
Session - 2026-2027

Sl. No.	Week No.	Class No.	Topic to be Covered
1	1	Class 1	Unit I: Introduction to Geology, Branches of Geology
2	1	Class 2	Importance of Geology in Civil Engineering, Composition of Earth
3	1	Class 3	Definition, Classification and Engineering Uses of Igneous, Sedimentary and Metamorphic Rocks
4	2	Class 1	Importance of Soil as Construction Material and Foundation Bed
5	2	Class 2	Field Applications of Geotechnical Engineering – Foundation, Pavement, Retaining Structures and Earthen Dams
6	2	Class 3	Revision of Unit I and Discussion on Engineering Applications
7	3	Class 1	Unit II: Soil as a Three-Phase System, Water Content
8	3	Class 2	Determination of Water Content (Oven Drying Method), Void Ratio, Porosity
9	3	Class 3	Degree of Saturation, Density Index, Air Content, Percentage Air Voids and Relationships
10	4	Class 1	Unit Weight of Soil – Bulk, Dry, Saturated, Submerged and Unit Weight of Solids
11	4	Class 2	Determination of Bulk & Dry Unit Weight by Core Cutter and Sand Replacement Method
12	4	Class 3	Determination of Specific Gravity by Pycnometer
13	5	Class 1	Consistency of Soil, Atterberg Limits – Liquid Limit
14	5	Class 2	Plastic Limit, Shrinkage Limit and Plasticity Index
15	5	Class 3	Particle Size Distribution Test and Plotting of Grading Curve
16	6	Class 1	Effective Diameter, Well Graded and Uniformly Graded Soil
17	6	Class 2	BIS Classification of Soil
18	6	Class 3	Numerical Problems and Revision of Unit II
19	7	Class 1	Unit III: Permeability – Definition, Darcy's Law, Coefficient of Permeability
20	7	Class 2	Factors Affecting Permeability
21	7	Class 3	Constant Head Test, Falling Head Test and Numerical Problems
22	8	Class 1	Seepage Through Earthen Structures, Seepage Velocity and Seepage Pressure
23	8	Class 2	Phreatic Line, Flow Lines, Flow Net and Applications
24	8	Class 3	Effective Stress and Quicksand Condition
25	9	Class 1	Unit IV: Compaction – Concept, Standard & Modified Proctor Test (IS Code)
26	9	Class 2	Compaction Curve, OMC, MDD and Zero Air Void Line

27	9	Class 3	Factors Affecting Compaction and Field Methods – Rolling, Ramming and Vibration
28	10	Class 1	Consolidation – Concept and Difference Between Compaction & Consolidation
29	10	Class 2	Terzaghi's Spring Analogy and Field Implications
30	10	Class 3	Soil Stabilization – Necessity, Methods and CBR Test
31	11	Class 1	Site Investigation and Soil Exploration – Necessity and Types
32	11	Class 2	Location and Number of Test Pits and Bores
33	11	Class 3	Field Identification of Soil – Dry Strength, Dilatancy and Toughness Tests
34	12	Class 1	Unit V: Shear Failure – General, Local and Punching Shear
35	12	Class 2	Shear Strength of Soil, Cohesion and Internal Friction
36	12	Class 3	Mohr-Coulomb Failure Theory, Strength Envelope and Strength Equations
37	13	Class 1	Direct Shear Test – Procedure and Applications
38	13	Class 2	Triaxial Shear Test – Procedure and Applications
39	13	Class 3	Vane Shear Test and Comparison of Shear Tests
40	14	Class 1	Unit VI: Bearing Capacity – Ultimate, Safe and Allowable Bearing Capacity
41	14	Class 2	Terzaghi's Bearing Capacity Theory, Assumptions and Effect of Water Table
42	14	Class 3	Plate Load Test (IS:1888) and Standard Penetration Test (IS:2131)
43	15	Class 1	Earth Pressure – Active, Passive Earth Pressure, Coefficient of Earth Pressure
44	15	Class 2	Rankine's Earth Pressure Theory and Assumptions for Cohesionless Soil
45	15	Class 3	Types of Foundations – Shallow and Deep Foundations, Course Revision


 Signature of Faculty
 Civil Engg, GP Sonpur


 Signature of HOD
 Civil Engg, GP Sonpur


 Academic Co-ordinator
 Civil Engg, GP Sonpur