LESSON PLAN

Name of the Institute :	C V RAMAN POLYTECHNIC,BHUBANESWAR
Department :	CIVIL ENGINEERING
Semester/Division/Branch :	3RD / CIVIL
Subject Name with code :	GEOTECHNICAL ENGINEERING (TH.2)
Total No. of Class (Required) :	60
Faculty Name :	DEBI PRASAD PANDA

Class No.	Brief Description of the Topic/Chapter to be taught	Remarks
1	Introduction to Geotechnical Engineering.	
2	Soil as a three Phase system.	
3	Preliminary definitions and relationship.	
4	Three Phase system.	
5	Water Content, Density, Specific gravity, Voids ratio, Porosity.	
6	Percentage of air voids, air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density.	
7	Interrelationship of various soil parameters.	
8	Determination of Index properties with various methods.	
9	Water Content & Specific Gravity.	
10	Classification of soil, I.S. Classification, Plasticity chart.	
11	Consistency of Soils.	
12	Atterberg's Limits.	
13	Plasticity Index, Consistency Index, Liquidity Index.	
14	Particle size Distribution and classification.	
15	..........DO............	
16	wet mechanical analysis.	
17	Particle size distribution curve and its uses.	
18	Concept and Co-efficient of Permeability.	
19	Darcy's Law.	
20	Factors affecting Permeability.	
21	Constant head and falling head permeability Test.	
22	Seepage pressure, the phenomenon of quick sand.	
23	Concept of flow-net and its properties.	
24	Application of flow-net.	
25	Compaction, its types and tests.	
26	OMC of Soil, Maximum dry density, Zero air void line	
27	Factors affecting Compaction	
28	Field compaction methods and their suitability.	
29	Consolidation & distinction between compaction and consolidation.	
30	Laboratory Consolidation Test, Co-efficient of Consolidation etc.	
31	Terzaghi's theory of one-dimensional consolidation.	
32	Estimation of consolidation settlement, primary and secondary consolidation.	
33	Concept of shear strength.	
34	Mohr- Coulomb failure theory & Cohesion.	
35	Angle of internal friction.	

36	Strength envelope for different type of soil.
37	Measurement of shear strength: Direct shear test, triaxial shear test.
38	Unconfined compression test and vane-shear test.
39	Earth Pressure and its types in details.
40	Active earth pressure, Passive earth pressure.
41	Earth pressure at Rest formulations.
42	Use of Rankine's formula for various retaining structures.
43	.........DO............
44	Backfill with no surcharge.
45	.........DO............
46	Backfill with uniform surcharge.
47	Introduction to Foundation Engineering and its functions.
48	Different type of foundations
49	Different type of shallow and deep foundations with sketches.
50	Types of failure of foundations.
51	General shear, Local shear & punching shear.
52	Bearing capacity of soils by various formula.
53	Bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip.
54	Circular and square footings, Effect water table on bearing capacity of soil.
55	Introduction to Soil dynamics.
56	.........DO............
57	Types of machines and machine foundation.
58	.........DO............
59	Design of machine foundations.
60	Plate load test and standard penetration test.

Signature of the Faculty

(D.P. Panda).

Signature of the H.O.D