

LESSON PLAN: FOUNDATION ENGINEERING

Lecture No. 1 to 15 – Prof. Tejas Joshi

Lecture No. 1 to 30 – Dr. Hasan Rangwala or Prof. Alka Shah

Sr No	Lecture No	Topics	CLOs
		Prof Tejas Joshi	
	1	Introduction of Foundation Engineering and its relevance to practical conditions	1, 2
	2	Soil Investigation: Objectives, Planning, Stages, Depth of Exploration and its lateral extent	1
	3	Methods of Exploration	1
	4	Methods of Exploration, Standard Penetration Test, Vane shear test	1
	5	Bearing capacity: Definition Shear and settlement criteria, Terzaghi's theory, I.S Code method	2
	6	Bearing capacity from SPT, Plate Load Test, Factors affecting bearing capacity	2
	7-9	Problems on bearing capacity.	2
	10	Consolidation of soil: Introduction, Process and Stages, Spring analogy	1, 2
	11	Consolidation test Procedure, Various coefficients and indexes,	1, 2
	12	Preconsolidation pressure, N.C and O.C soil	1, 2
	13	Settlement of foundation: Types and Causes, Immediate and consolidation settlement. Numerical based on consolidation	1, 2
	14	Final settlement, various examples of settlement, numericals,	1, 2
	15	Innovative Assignment	
		Dr. Hasan Rangwala /Prof. Alka Shah	
	1	Earth Pressure: Active and Passive earth pressure due to cohesive soil	2
	2	Active and Passive earth pressure for cohesionless soil	2
	3	Active and Passive earth pressure due to inclined backfill	2
	4	Rankines earth pressure theory: assumptions and derivation	2
	5	Coulombs Earth pressure Theory, graphical methods to calculate earth pressure	2
	6	Problems on earth pressure calculations	2

7	Design of sheet piling	2,3
8	Stability of slopes: Slope failure,Factor of safety	3
9	Stability of infinite slope for cohesive as well as non cohesive soil	3
10	Swedish circle method	3
11	Numericals based on slope stability,Improving stability of slopes	3
12	Design of shallow foundation: classification & selection,design criteria	2
13	Design of Shallow foundation: Spread footing,Strap footing	2
14	Design of Combined footing	2
15	Design of Raft Foundation	2
16	Problems of Foundation Design	2
17	Pile Foundation: Introduction and Necessity,Static and Dynamic capacity	2
18	Load Test on pile	2
19	Pile groups: Single versus pile group.Settlement of pile group	2
20	Ground Improvement Techniques: Drainage, Dewatering	3
21	Mechanical stabilization,Chemical stabilization,Stabilizing with cement,lime and flyash	3
22	Compaction,Stone column method of stabilization, Vibroflotation	3
23	Reinforced earth,Geotextiles	3
24	Soil Dynamics	1
25	Liquefaction and effect of earthquake on foundation.	1
26	Geophysical methods, Soil Investigation report	1
27	Introduction to Machine foundation	1
28	Introduction to soil structure Interaction	1
29	Innovative assignment and Recap of all the topics covered.	
30	Class Test	