



RAAJDHANI ENGINEERING COLLEGE, BHUBANESWAR
Department of Civil Engineering

LESSON PLAN

2023-2024

Session	:	Sep 2023- Jan 2024
Course Type	:	Theory
Semester/Branch	::	3rd Semester, Civil Engineering
Subject (with code)	::	Geotechnical Engineering (Th.2)
Contact hours/week	::	4 hours
Name of Faculty	::	Dr. Amaresh Tripathy

S L. N O.	CLAS S I D	COURSE CONTENT	EXHIBIT/ REFERENCE
1	1.1	Soil and Soil Engineering Scope of Soil Mechanics Origin and formation of soil	https://archive.nptel.ac.in/courses/105/105/105105168/
2	1.2	Soil as a three Phase system.	https://archive.nptel.ac.in/courses/105/105/105105168/
3	1.3	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids,	https://archive.nptel.ac.in/courses/105/105/105105168/
4	2.1	air content, degree of saturation, density Index, Bulk/Saturated/dry/submerged density,	https://archive.nptel.ac.in/courses/105/105/105105168/
5	2.2	Interrelationship of various soil parameters	https://archive.nptel.ac.in/courses/105/105/105105168/
6	3.1	Water Content Specific Gravity Particle size distribution: Sieve analysis, wet mechanical analysis,	https://archive.nptel.ac.in/courses/105/105/105105168/
7	3.2	Particle size distribution curve and its uses Consistency of Soils	https://archive.nptel.ac.in/courses/105/105/105105168/
8	3.3	Atterberg's Limits, Plasticity Index,	https://archive.nptel.ac.in/courses/105/105/105105168/
9	3.4	Numerical Problems	https://archive.nptel.ac.in/courses/105/105/105105168/
10	4.1	Consistency Index, Liquidity Index	https://archive.nptel.ac.in/courses/105/105/105105168/
11	4.2	Numerical Problems	
12	5.1	Numerical Problems	
13	5.2	Classification of Soil : General. I.S. Classification, Plasticity chart	https://archive.nptel.ac.in/courses/105/105/105105168/
14	6.1	Permeability and Seepage : Concept of Permeability,	https://archive.nptel.ac.in/courses/105/105/105105168/
15	6.2	Darcy's Law, Co-efficient of Permeability	https://archive.nptel.ac.in/courses/105/105/105105168/

			168/
16	7.1	Factors affecting Permeability.	https://archive.nptel.ac.in/courses/105/105/105105168/
17	7.2	Constant head permeability and falling head permeability Test	https://archive.nptel.ac.in/courses/105/105/105105168/
18	8.1	Seepage pressure, effective stress, phenomenon of quick sand	https://archive.nptel.ac.in/courses/105/105/105105168/
19	8.2	Numerical Problems	
20	9.1	Numerical Problems	
21	9.2	Compaction and Consolidation : Compaction: Compaction	https://archive.nptel.ac.in/courses/105/105/105105168/
22	1.1	Maximum dry density, Zero air void line	https://archive.nptel.ac.in/courses/105/105/105105168/
23	1.2	Light and heavy compaction Test, Optimum Moisture Content of Soil	https://archive.nptel.ac.in/courses/105/105/105105168/
24	1.3	Factors affecting Compaction, Field compaction methods and their suitability	https://archive.nptel.ac.in/courses/105/105/105105168/
25	1.4	Monthly Test	
26	2.1	Numerical Problem	
27	2.2	Numerical Problem	
28	2.3	Consolidation: Consolidation,	https://archive.nptel.ac.in/courses/105/105/105105168/
29	2.4	distinction between compaction and consolidation.	https://archive.nptel.ac.in/courses/105/105/105105168/
30	2.5	Terzaghi's model analogy of compression/	https://archive.nptel.ac.in/courses/105/105/105105168/
31	2.6	springs showing the process of consolidation – field implications	https://archive.nptel.ac.in/courses/105/105/105105168/
32	2.7	Shear Strength : Concept of shear strength, Mohr	https://archive.nptel.ac.in/courses/105/105/105105168/
33	2.8	Coulomb failure theory	https://archive.nptel.ac.in/courses/105/105/105105168/
34	3.1	Cohesion, Angle of internal friction	https://archive.nptel.ac.in/courses/105/105/105105168/
35	3.2	Strength envelope for different type of soil.	https://archive.nptel.ac.in/courses/105/105/105105168/
36	3.3	Numerical Problem	
37	3.4	Numerical Problem	
38	3.5	Measurement of shear strength;- Direct shear test,	https://archive.nptel.ac.in/courses/105/105/105105168/
39	3.6	triaxial shear test	https://archive.nptel.ac.in/courses/105/105/105105168/
40	3.8	Unconfined compression test	https://archive.nptel.ac.in/courses/105/105/105105168/
41	3.9	vane-shear test	https://archive.nptel.ac.in/courses/105/105/105105168/
42	3.10	Earth Pressure on Retaining Structures : Active earth pressure	https://archive.nptel.ac.in/courses/105/105/105105168/
43	4.1	Passive earth pressure	https://archive.nptel.ac.in/courses/105/105/105105168/
44	4.2	Earth pressure at rest.	https://archive.nptel.ac.in/courses/105/105/105105168/

45	4.3	Use of Rankine's formula for the following cases (cohesion-less soil only) :	https://archive.nptel.ac.in/courses/105/105/105105168/
46	5.1	Backfill with no surcharge	https://archive.nptel.ac.in/courses/105/105/105105168/
47	5.2	ii) backfill with uniform surcharge	https://archive.nptel.ac.in/courses/105/105/105105168/
48	5.3	Numerical Problems	
49	5.4	Numerical Problems	
50	6.1	Foundation Engineering: Functions of foundations, shallow and deep foundation,	https://archive.nptel.ac.in/courses/105/105/105105168/
51	6.2	Different type of shallow and deep foundations with sketches	https://archive.nptel.ac.in/courses/105/105/105105168/
52	6.3	Types of failure (General shear, Local shear & punching shear)	https://archive.nptel.ac.in/courses/105/105/105105168/
53	6.4	Numerical Problems	
54	6.5	Numerical Problems	
55	6.6	Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip	https://archive.nptel.ac.in/courses/105/105/105105168/
56	7.1	Monthly Test	https://archive.nptel.ac.in/courses/105/105/105105168/
57	7.2	Numerical Problems	https://archive.nptel.ac.in/courses/105/105/105105168/
58	7.3	Circular and square footings, Effect water table on bearing capacity of soil	https://archive.nptel.ac.in/courses/105/105/105105168/
59	7.4	Question and Answer discussion	https://archive.nptel.ac.in/courses/105/105/105105168/
60	7.5	Plate load test and standard penetration test	https://archive.nptel.ac.in/courses/105/105/105105168/