

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

SUBJECT: GEOTECHNICAL ENGINEERING (TH 2)

FACULTY: SRI KSHITISH KUMAR SAHOO

ACCADEMIC SESSION: 2023-24

SEMESTER: 3RD

SEC: B

Sd/-
H O D (Civil Engg.)

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Discipline: Civil Engineering	Semester/ Section: 3 RD / A		Name of the teaching faculty: SRI KSHITISH KUMAR SAHOO
Subject: Th2.Geotechnical Engineering	No. of Days/ per week class allotted: 04period per week. (Tue, Wed, Fri & Sat)		Semester From Date: 15-09-2022 To Date: 22-12-2022 No. of weeks: 17
Week	Class Day	No of period available	Topics to be covered
1 ST	01/08/23	1	1 Introduction: 1.1 Soil and Soil Engineering
	02/08/23	1	1.2 Scope of Soil Mechanics, 1.3 Origin and formation of soil
	04/08/23	1	2 Preliminary Definitions and Relationship: 2.1 Soil as a three Phase system.
	05/08/23	1	2.2 Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content.
2 ND	08/08/23	1	2.2 degree of saturation, density Index, Bulk/Saturated/dry/submerged density, Interrelationship of various soil parameters.
	09/08/23	1	Problems on chapter 2.
	11/08/23	1	Problems on chapter 2.
	12/08/23	1	3 Index Properties of Soil: 3.1 Water Content
3 RD	16/08/23	1	3.2 Specific Gravity
	18/08/23	1	3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses.
	19/08/23	1	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index.
4 TH	22/08/23	1	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
	23/08/23	1	Problems on chapter 3
	25/08/23	1	Problems on chapter 3
	26/08/23	1	4 Classification of Soil: 4.1 General
5 TH	29/08/23	1	4.2 I.S. Classification, Plasticity chart
	01/09/23	1	5 Permeability and Seepage: 5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability.
	02/09/23	1	Class test 1

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6 TH	05/09/23	1	5.4 Seepage pressure, effective stress, phenomenon of quick sand
	08/09/23	1	5.4 Seepage pressure, effective stress, phenomenon of quick sand
	09/09/23	1	Problems on chapter 5
7 TH	12/09/23	1	Problems on chapter 5
	13/09/23	1	6 Compaction and Consolidation: 6.1 Compaction: Compaction, Light and heavy compaction Test
	15/09/23	1	6.1 Optimum Moisture Content of Soil, Maximum dry density, Zero air void line.
	16/09/23	1	6.1 Factors affecting Compaction, Field compaction methods and their suitability and problems.
8 TH	22/09/23	1	6.2 Consolidation: Consolidation, distinction between compaction and consolidation.
	23/09/23	1	6.2 Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications.
9 TH	26/09/23	1	Problems on chapter 6.
	27/09/23	1	7 Shear Strength: 7.1 Concept of shear strength, Mohr- Coulomb failure theory
	30/09/23	1	7.1 Cohesion, Angle of internal friction, strength envelope for different type of soil.
10 TH	03/10/23	1	7.1 Measurement of shear strength;- Direct shear test.
	04/10/23	1	7.1 triaxial shear test, unconfined compression test and vane-shear test.
	06/10/23	1	8 Earth Pressure on Retaining Structures: 8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest.
	07/10/23	1	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)
11 TH	10/10/23	1	IA
	11/10/23	1	IA
	13/10/23	1	8.2 (i) Backfill with no surcharge.
12 TH	17/10/23	1	8.2 (ii) backfill with uniform surcharge.
	18/10/23	1	Problems on chapter 8
	20/10/23	1	Problems on chapter 8
13 TH	31/10/23	1	Problems on chapter 8
	01/11/23	1	9 Foundation Engineering: 9.1 Functions of foundations, shallow and deep foundation.
	03/11/23	1	9.1 different type of shallow and deep foundations with sketches.
	04/11/23	1	9.1 Types of failure (General shear)

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14 TH	07/11/23	1	9.1 Types of failure (Local shear)
	08/11/23	1	9.1 Types of failure (punching shear)
	10/11/23	1	Class test 2
	11/11/23	1	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.
15 TH	14/11/23	1	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.
	15/11/23	1	9.3 Plate load test and standard penetration test.
	17/11/23	1	Problem on chapter 9
	18/11/23	1	Problem on chapter 9
16 TH	21/11/23	1	Problem on chapter 9
	22/11/23	1	Doubt clarification class
	24/11/23	1	Doubt clarification class
	25/11/23	1	Doubt clarification class
17 TH	28/11/23	1	Previous year questions discussion.
	29/11/23	1	Previous year questions discussion.