

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

SUBJECT: GEOTECHNICAL ENGINEERING (TH 2)

FACULTY: SRI KSHITISH KUMAR SAHOO

ACCADEMIC SESSION: 2022-23

SEMESTER: 3RD

SEC: A

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: 04 period per week. (Mon, Tue, Wed, Fri)		Semester From Date: 15-09-2022 To Date: 22-12-2022 No. of weeks: 14
Week	Class Day	No of period available	Topics to be covered
1ST	16.09.2022	1	1 Introduction: 1.1 Soil and Soil Engineering
2ND	19.09.2022	1	1.2 Scope of Soil Mechanics, 1.3 Origin and formation of soil
	20.09.2022	1	2 Preliminary Definitions and Relationship: 2.1 Soil as a three Phase system.
	21.09.2022	1	2.2 Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content.
	23.09.2022	1	2.2 degree of saturation, density Index, Bulk/Saturated/dry/submerged density, Interrelationship of various soil parameters.
3RD	26.09.2022	1	Problems on chapter 2.
	27.09.2022	1	Problems on chapter 2.
	28.09.2022	1	3 Index Properties of Soil: 3.1 Water Content
	30.09.2022	1	3.2 Specific Gravity
4TH	10.10.2022	1	3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses.
	11.10.2022	1	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index.
	12.10.2022	1	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
	14.10.2022	1	Problems on chapter 3
5TH	17.10.2022	1	Problems on chapter 3
	18.10.2022	1	4 Classification of Soil: 4.1 General
	19.10.2022	1	4.2 I.S. Classification, Plasticity chart
	21.10.2022	1	5 Permeability and Seepage: 5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability.

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6TH	25.10.2022	1	Class test 1
	26.10.2022	1	5.4 Seepage pressure, effective stress, phenomenon of quick sand
	28.10.2022	1	5.4 Seepage pressure, effective stress, phenomenon of quick sand
7TH	31.10.2022	1	Problems on chapter 5
	01.11.2022	1	Problems on chapter 5
	02.11.2022	1	6 Compaction and Consolidation: 6.1 Compaction: Compaction, Light and heavy compaction Test
	04.11.2022	1	6.1 Optimum Moisture Content of Soil, Maximum dry density, Zero air void line.
8TH	07.11.2022	1	6.1 Factors affecting Compaction, Field compaction methods and their suitability and problems.
	09.11.2022	1	6.2 Consolidation: Consolidation, distinction between compaction and consolidation.
	11.11.2022	1	6.2 Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications.
9TH	14.11.2022	1	Problems on chapter 6.
	15.11.2022	1	IA
	16.11.2022	1	IA
	18.11.2022	1	7 Shear Strength: 7.1 Concept of shear strength, Mohr- Coulomb failure theory
10TH	21.11.2022	1	7.1 Cohesion, Angle of internal friction, strength envelope for different type of soil.
	22.11.2022	1	7.1 Measurement of shear strength;- Direct shear test.
	23.11.2022	1	7.1 triaxial shear test, unconfined compression test and vane-shear test.
	25.11.2022	1	8 Earth Pressure on Retaining Structures: 8.1 Active earth pressure, Passive earth pressure, Earth pressure at rest.
11TH	28.11.2022	1	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)
	29.11.2022	1	8.2 (i) Backfill with no surcharge.
	30.11.2022	1	8.2 (ii) backfill with uniform surcharge.
	02.12.2022	1	Problems on chapter 8
12TH	05.12.2022	1	Problems on chapter 8
	06.12.2022	1	Problems on chapter 8
	07.12.2022	1	
	09.12.2022	1	Class test 2

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13TH	12.12.2022	1	9 Foundation Engineering: 9.1 Functions of foundations, shallow and deep foundation.
	13.12.2022	1	9.1 different type of shallow and deep foundations with sketches.
	14.12.2022	1	9.1 Types of failure (General shear, Local shear & punching shear)
	16.12.2022	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.
14TH	19.12.2022	1	9.3 Plate load test and standard penetration test.
	20.12.2022	1	Previous year questions discussion.
	21.12.2022	1	Previous year questions discussion.