Decipline: Civil Engineering	Semester: 3rd No of days/ per week class allotted: 4	Name of the Teaching Faculty: SUBRAT KUMAR PANIGRAHI
Subject: Geotechnical Engineering		Semester From date :15.09.2022 To Date: 22.12.2022 No. of Weeks: 13

Week	Class Day	Theory/ Practical Topics
	1st	**Introduction** 1.1 Soil and Soil Engineering
Sept-3rd	2nd	1.2 Scope of Soil Mechanics 1.3 Origin and formation of soil
	3rd	**Preliminary Definitions and Relationship** 2.1 Soil as a three Phase system
	4th	2.2 Water Content, Density, Specific gravity, Voids ratio, Porosity
	5th	Percentage of air voids, air content, degree of saturation
Sept-4th	6th	Density Index, Bulk/Saturated/dry/submerged density, Interrelationship of various soil parameters.
	7th	Solving Problems
	8th	Solving Problems
	9th	PUJA HOLIDAYS
Oct-1st	10th	PUJA HOLIDAYS
	11th	PUJA HOLIDAYS
	12th	PUJA HOLIDAYS
	13th	**Index Properties of Soil** 3.1 Water Content 3.2 Specific Gravity 3.3 Particle size distribution: Sieve analysis, wet mechanical analysis,
Oct-2nd	14th	3.4 Particle size distribution curve and its uses Consistency of Soils, Atterberg's Limits , Plasticity Index, Consistency Index, Liquidity Index.
	15th	**Classification of Soil** 4.1 General
	16th	I.S Classification, Plasticity Chart
	17th	I.S Classification, Plasticity Chart
Oct-3rd	18th	Problem Solving
	19th	Solving Problems
	20th	**Permeability and Seepage** 5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability
	21st	5.2 Factors affecting Permeability.
Oct-4th	22th	5.3 Constant head permeability and falling head permeability Test.
	23th	Problem Solving
	24th	5.4 Seepage pressure,
	25th	Effective stress, phenomenon of quick sand
Nov-1st	26th	Solving Problems
	27th	**Compaction and Consolidation** 6.1 Compaction: Compaction, Light and heavy compaction Test
	28th	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line,
	29th	Factors affecting Compaction, Field compaction methods and their suitability
Nov-2nd	30th	Problem Solving
	31st	6.2 Consolidation: Consolidation, distinction between compaction and consolidation
	32nd	Terzaghi's model analogy of compression/ springs showing the process of consolidation field implications

Nov-3rd	33rd	Solving Problems
	34th	**INTERNAL ASSESSMENT**
	35th	**Shear Strength** 7.1 Concept of shear strength, Mohr- Coulomb failure theory,
	36th	Cohesion, Angle of internal friction, strength envelope for different type of soil,
Nov-4th	37th	Measurement of shear strength;- Direct shear test, triaxial shear test,
	38th	unconfined compression test and vane-shear test
	39th	**INERNAL ASSESSMENT**
	40th	**Earth Pressure on Retaining Structures** 8.1 Active earth pressure, Passive earth pressure,Earth pressure at rest.
Dec-1st	41st	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge
	42nd	Problem Solving
	43rd	(ii) backfill with uniform surcharge Problem Solving
	44th	**Foundation Engineering** 9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches
Dec-2nd	45th	Types of failure (General shear, Local shear & punching shear)
	46th	9.2 Bearing capacity of soil,
	47th	Bearing capacity of soils using Terzaghi's formulae
	48th	Problem Solving
Dec-3rd	49th	IS Code formulae for strip, Circular and square footings
	50th	Effect water table on bearing capacity of soil
	51st	Problem Solving
	52nd	Plate load test and standard penetration test

13.9.22
Lecturer

13.9.22
HOD
Civil Engg.

13/09/22
Academic
Co-ordinator

Principal
GP Nabarangpur