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 : 01.07.2024 To Date: 08.11.2024 No. of Weeks: 15

Week	Class Day	Theory/ Practical Topics
	1	**Introduction** 1.1 Soil and Soil Engineering
1st	2	1.2 Scope of Soil Mechanics 1.3 Origin and formation of soil
	3	**Preliminary Definitions and Relationship** 2.1 Soil as a three Phase system
	4	2.2 Water Content, Density, Specific gravity, Voids ratio, Porosity
	5	Percentage of air voids, air content, degree of saturation
2nd	6	Density Index, Bulk/Saturated/dry/submerged density, Interrelationship of various soil parameters.
	7	Solving Problems
	8	Solving Problems
	9	Solving Numericals
3rd	10	Solving Numericals
	11	Solving Numericals
	12	Solving Numericals
	13	**Index Properties of Soil** 3.1 Water Content 3.2 Specific Gravity 3.3 Particle size distribution: Sieve analysis, wet mechanical analysis,
4th	14	3.4 Particle size distribution curve and its uses Consistency of Soils, Atterberg's Limits , Plasticity Index, Consistency Index, Liquidity Index.
	15	**Classification of Soil** 4.1 General
	16	I.S Classification, Plasticity Chart
	17	I.S Classification, Plasticity Chart
5th	18	Problem Solving
	19	Solving Problems
	20	**Permeability and Seepage** 5.1 Concept of Permeability, Darcy's Law, Co-efficient of Permeability
	21	5.2 Factors affecting Permeability.
6th	22	5.3 Constant head permeability and falling head permeability Test.
	23	Problem Solving
	24	5.4 Seepage pressure,
	25	Effective stress, phenomenon of quick sand
7th	26	Solving Problems
	27	**Compaction and Consolidation** 6.1 Compaction: Compaction, Light and heavy compaction Test
	28	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line,
	29	Factors affecting Compaction, Field compaction methods and their suitability
8th	30	Problem Solving
	31	6.2 Consolidation: Consolidation, distinction between compaction and consolidation
	32	Terzaghi's model analogy of compression/ springs showing the process of consolidation field implications
	33	Solving Problems
9th	34	**INTERNAL ASSESSMENT**
	35	**Shear Strength** 7.1 Concept of shear strength, Mohr- Coulomb failure theory,

	36	Cohesion, Angle of internal friction, strength envelope for different type of soil,
10th	37	Measurement of shear strength;- Direct shear test, triaxial shear test,
	38	unconfined compression test and vane-shear test
	39	**INERNAL ASSESSMENT**
	40	**Earth Pressure on Retaining Structures** 8.1 Active earth pressure, Passive earth pressure,Earth pressure at rest.
11th	41	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only) (i) Backfill with no surcharge
	42	Problem Solving
	43	(ii) backfill with uniform surcharge Problem Solving
	44	**Foundation Engineering** 9.1 Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches
12th	45	Types of failure (General shear, Local shear & punching shear)
	46	9.2 Bearing capacity of soil,
	47	Bearing capacity of soils using Terzaghi's formulae
	48	Problem Solving
13th	49	IS Code formulae for strip, Circular and square footings
	50	Effect water table on bearing capacity of soil
	51	Problem Solving
	52	Plate load test and standard penetration test
14th	53	9.2 Bearing capacity of soil,
	54	Bearing capacity of soils using Terzaghi's formulae
	55	Problem Solving
	56	IS Code formulae for strip, Circular and square footings
15th	57	Effect water table on bearing capacity of soil
	58	Problem Solving
	59	Plate load test and standard penetration test
	60	Plate load test and standard penetration test
16th	61	PUJA HOLIDAYS
	62	
	63	
	64	
17th	65	Effect water table on bearing capacity of soil
	66	Problem Solving
	67	Plate load test and standard penetration test
	68	Plate load test and standard penetration test
18th	69	Effect water table on bearing capacity of soil
	70	Problem Solving
	71	Plate load test and standard penetration test
	72	Plate load test and standard penetration test
19th	73	Effect water table on bearing capacity of soil
	74	Problem Solving
	75	Plate load test and standard penetration test
	76	Plate load test and standard penetration test

Lecturer — HOD, Civil Engg. — Academic Co-ordinator — Principal, GP Nabarangpur