ASIAN SCHOOL OF TECHNOLOGY, BHUBANESWAR

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Discipline: Civil engineering	Semester : 3rd	No. of periods available: 51	Name of Teaching Faculty: Ankita Rath
Subject: Geotechnical Engineering	No. of Days/ per week class allotted : 4 periods per week		No. of weeks : 13
Week	Class Day		Topics to be covered
1st	1st	1	Soil and Soil Engineering
	2nd	1	Scope of Soil Mechanics
	3rd	1	Origin and formation of soil
	4th	1	Revision
2nd	5th	1	Soil as a three Phase system.
	6th	1	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content, degree of saturation,
	7th	1	density Index, Bulk/Saturated/dry/submerged density,
	8th	1	Interrelationship of various soil parameters
3rd	9th	1	Practice Questions
	10th	1	Practice Questions
	11th	1	Practice Questions
	12th	1	Revision
4th	13th	1	Water Content , Specific Gravity
	14th	1	Sieve analysis, wet mechanical analysis
	15th	1	particle size distribution curve and its uses
	16th	1	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
5th	17th	1	Practice Question
	18th	1	Doubt Clarification and revision
	19th	1	Classification of Soil
	20th	1	I.S. Classification, Plasticity

			chart
6th	21st	1	Class Test
	22nd	1	Test Answers Discussion
	23rd	1	Concept of Permeability, Darcy's Law, Co-efficient of Permeability
	24th	1	Factors affecting Permeability
7th	25th	1	Constant head permeability and falling head permeability Test.
	26th	1	Practice Questions
	27th	1	Seepage pressure, effective stress
	28th	1	phenomenon of quick sand
8th	29th	1	Practice Questions
	30th	1	Doubt Clarification and Revision
	31st	1	Compaction, Light and heavy compaction Test
	32nd	1	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line
9th	33rd	1	Factors affecting Compaction
	34th	1	Field compaction methods and their suitability
	35th	1	Class test
	36th	1	Test Answers Discussion and revision
10th	37th	1	Consolidation, distinction between compaction and consolidation.
	38th	1	Terzaghi's model analogy of compression/ springs showing the process of consolidation
	39th	1	field implications
	40	1	Revision
11th	41st	1	Concept of shear strength, Mohr- Coulomb failure theory
	42nd	1	Cohesion, Angle of internal friction, strength envelope for different type of soil
	43rd	1	Practice Questions
	44th	1	Measurement of shear strength;- Direct shear test,

			triaxial shear test, unconfined compression test and vane-shear test
12th	45th	1	Revision
	46th	1	Active earth pressure, Passive earth pressure at rest.
	47th	1	Use of Rankine's formula for the following cases (cohesion- less soil only) (i) Backfill with no surcharge, (ii) backfill with uniform surcharge
	48th	1	Practice Questions
13th	49th	1	Revision
	50th	1	Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches.
	51st	1	Types of failure (General shear, Local shear & punching shear)
	52nd	3	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
			Plate load test and standard penetration test