

PNS SCHOOL OF ENGINEERING & TECHNOLOGY

LESSON PLAN

BRANCH-CIVIL	SEMESTER-3RD	NAME OF THE FACULTY-ER. ITISHREE NAYAK
SUBJECT-GEOTECHNICAL ENGINEERING	NO OF DAYS PER WEEK -4 CLASS ALLOTTED-60	SEMESTER FROM-07/07/2025 TO 15/11/2025
WEEK	CLASS DAY	THEORY TOPIC
1ST	1ST	Introduction of Geology, Branches of Geology.
	2ND	Importance of Geology for civil engineering structure
	3RD	Rocks and its type.
	4TH	engineering uses of igneous, sedimentary and metamorphic rocks.
2ND	1ST	Importance of soil as construction material in Civil engineering.
	2ND	Field application of geotechnical engineering for foundation design.
	3RD	Soil as a three phase system. water content, determination of water content by oven drying method.
	4TH	Unit weight of soil mass. – bulk unit weight, dry unit weight, unit weight of solids, saturated unit weight, submerged unit weight.
3RD	1ST	Consistency of soil, Atterberg limits of consistency: Liquid limit, plastic limit and shrinkage limit.
	2ND	plastic index, liquid index, shrinkage index of soil.
	3RD	Particle size distribution test and plotting of curve.
	4TH	Determination of effective diameter of soil, well graded and uniformly graded soils, BIS classification of soil.
4TH	1ST	Definition of permeability, Darcy's law of permeability, coefficient of permeability, factors affecting permeability.
	2ND	determination of coefficient of permeability by constant head and falling head tests.
	3RD	simple problems to determine coefficient of permeability.
	4TH	Seepage through earthen structures, seepage velocity.
5th	1ST	seepage pressure, phreaticline, flow lines.
	2ND	Application of flow net.
	3RD	Effective stress, quick Sand method.
	4TH	Concept of compaction, Standard and Modified proctor test.
6th	1ST	Plotting of Compaction curve for determining: Optimum moisture content (OMC)
	2ND	Determination of maximum dry density (MDD).
	3RD	Factors affecting compaction.
	4TH	field methods of compaction -rolling, ramming and vibration.
7th	1ST	Define consolidation.
	2ND	Difference between compaction and consolidation
	3RD	Terzaghi's Model analogy of compression.
	4TH	Concept of soil stabilization
8th	1ST	Necessity of soil stabilization, different methods of soil stabilization
	2ND	California bearing ratio (CBR) test.
	3RD	Necessity of site investigation and soil exploration.
	4TH	Types of exploration.
9th	1ST	Deciding the location and number of test pits and bores.
	2ND	strength test, dilatancy test and toughness test.
	3RD	Shear failure of soil-General, local and punching shear, concept of shear strength of soil.
	4TH	shear failure of soil continue.
10th	1ST	Components of shearing resistance of soil.
	2ND	cohesion, internal friction of soil.
	3RD	Mohr-Coulomb failure theory.

	4TH	Strength envelope, strength equation for purely cohesive soil.
11th	1ST	Strength envelope, strength equation for purely cohesion less soil.
	2ND	Direct shear test.
	3RD	triaxial test and vane shear test.
	4TH	continue the topic and END.
12TH	1ST	Bearing capacity and theory of earth pressure.
	2ND	Concept of bearing capacity, ultimate bearing capacity.
	3RD	Introduction to Terzaghi's analysis.
	4TH	To continue and End.
13th	1ST	Effect of water table on bearing capacity.
	2ND	Field methods for determination of bearing capacity.
	3RD	To Continue and End.
	4TH	Plate load test.
14th	1st	Standard Penetration test(SPT).
	2nd	Definition of earth pressure and its type.
	3rd	Important Numerical on Earth pressure.
	4th	Rankine's theory and assumptions made for non-cohesive Soils.
15th	1st	Define Foundation and its types.
	2nd	REVISION
	3rd	REVISION
	4th	REVISION

SIGN OF LECTURE

HOD SIGN

PRINCIPAL SIGN