GEOTECHNICAL ENGINEERING

VI Semester: CE									
Course Code		Category	Hours / Week		Credits	Maximum Marks			
ACEB19		CORE	L	Т	Р	С	CIA	SEE	Total
			2	1	-	3	30	70	100
Contact Classes: 30		Tutorial Classes: 15	Practical Classes: Nil		s: Nil	Total Classes: 45			
OBJEC Students	TIVES: s will try to lea	rn:							
Ι	The fundamental knowledge on soils, importance in the design and construction process of massive structures								
II	The laborator	ry, field tests conducted of	on soils	to ident	ify the	better grou	nd to con	struction	1.
III	The methods	employed for soil prope	rties pre	diction	, soil la	yers and its	applicati	ons.	
IV	The role of shear strength in load carrying capacity of soils, restored and durable structures.								
COURS After su	COURSE OUTCOMES After successful completion of the course, students are be able to:								
CO 1	Summarizet	he various methods used	to predi	ct the s	oil proj	perties for t	he suitabi	lity of th	ıe
CO 2	Recall types calculation.	of soil per IS soil classifi	icationfo	or Index	and E	ngineering	soil prope	erties	
CO 3	Explain the	concepts of permeability,	, seepage	e and g	round v	vater table <mark>f</mark>	or highwa	ıys,	
CO4	airports, earth	hen dam construction.	ution for	field co	ondition	s for prov	iding roue	σh	
001	estimation of	soil engineering propert	ies.		Jildittio	is, for prov		5**	
CO 5	Recall the be	haviour of the soil in nor	mal, ove	er-conso	olidated	and under	-consolida	ated soil	sfor
CO 6	the embankm Examine the	importance of total neut	of clay s ral and e	oils. effectiv	e stress	in load car	rving can	acity of	
000	soilfor findin	g the compression rate in	n cohesio	on and	cohesic	onless soils.	i jing oup	acity of	
CO 7	Recognize the	e importance of consolid	ation, co	ompacti	on in s	ettlement ca	alculation	& comp	oute
	the consolida	tion settlement especiall	y in clay	ey soils	sto avo	id uneven s	ettlement	in	
CO 8	residential an	d commercial construction	ons.	ر مار م مینا	لمسمحه	4	4. 		
	drainage con	ditions for the inner capacity	by afrect	snearn	ng and	un-axial tes	ung unde	i unitere	m
CO 9	Interpret fail	ure criteria proposed by	Mohr-co	oulomb	and the	e soil shear	paramete	rs usedfo	or
	assessing the	stability of the retaining	walls, s	lopes a	nd emb	ankments.			

MODULE-I	INTRODUCTION AND INDEX PROPERTIES OF SOILS	Classes: 08					
Soil formation, clay mineralogy and soil structure, moisture content, weight-volume relationships,							
relative density.	Grain size analysis, sieve analysis, principle of hydrometer method, consi	stency limits					
and indices, I.S. classification of soils.							
MODULE-II	PERMEABILITY, EFFECTIVE STRESS AND SEEPAGE THROUGH SOILS	Classes: 10					
Capillary rise, flow of water through soils, Darcy's Law, permeability, factors affecting permeability,							
laboratory & field tests for determination of coefficient of permeability, permeability of layered soils;							
Total, neutral and effective stress, upward and downward seepage through soils, quick sand condition,							
flow nets: charac	teristics and uses.	l					
MODULE-III	STRESS DISTRIBUTION IN SOILS & COMPACTION	Classes: 09					
Boussinesq's and	d Westergard's theories for point load, uniformly loaded circular and recta	angular areas,					
pressure bulb, variation of vertical stress under point load along vertical and horizontal plane, Newmark's							
influence chart for	influence chart for irregular areas.						
Mechanism of co	ompaction, factors affecting compaction, effects of compaction on soil pr	roperties, field					
compaction equi	pment and compaction quality control.	Γ					
MODULE -IV	CONSOLIDATION	Classes: 10					
Types of compre	Types of compressibility, immediate settlement, primary consolidation and secondary consolidation, stress						
history of clay, e	history of clay, e-p and e-logp curves, normally consolidated soil, over and under consolidated soil, pre-						
consolidation pre	essure and its determination, Terzaghi's 1-D consolidation theory, coeffic	ient of					
consolidation squ	uare root time and logarithm of time fitting methods, computation of total	settlement					
and time rate of s	settlement.						
MODULE -V	SHEAR STRENGTH OF SOILS	Classes: 08					
MODULE -V Importance of sh	SHEAR STRENGTH OF SOILS ear strength, mohr and coulomb failure theories, types of laboratory tests	Classes: 08 for strength					
MODULE -V Importance of sh parameters, stren	SHEAR STRENGTH OF SOILS hear strength, mohr and coulomb failure theories, types of laboratory tests ogth tests based on drainage conditions, strength envelops, shear strength	Classes: 08 for strength of sands,					
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