

19CE4702B - GROUND IMPROVEMENT TECHNIQUES

Offering branch: CE														
Course Category:	Professional Elective					Credits:	3							
Course Type:	Theory					Lecture-Tutorial-Practical:	3-0-0							
Prerequisites:	20CE3402- Geotechnical Engineering					Continuous Evaluation:	30							
						Semester End Evaluation:	70							
						Total Marks:	100							
Course Outcomes														
Upon successful completion of the course, the student will be able to:														
CO1	Explain the interaction between clay and water and how the clay will be normalized using various methods												K4	
CO2	Explain what factors will be taken into account when designing for impact and shock resistance												K4	
CO3	Formulate the amount of time necessary to accelerate the dissipation of excess pore water pressure												K6	
CO4	Calculate the design factors for reinforced soil												K3	
CO5	Identify the design factors that will be considered when constructing a foundation on reinforced soil												K1	
Contribution of Course Outcomes towards achievement of Program Outcomes														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO₁	PSO2
CO1	2	2	2	2		3	3	3				3	2	3
CO2	2	2	2	2		3	3	3				3	2	3
CO3	3	3	3	3		3	3	3				3	3	3
CO4	2	2	2	2		2	2	2				2	2	2
CO5	2	2	2	2		1	1	1				1	2	1
Avg.	2	2	2	2		3	3	3				3	2	3
1- Low					2-Medium					3-High				
Course Content														
UNIT-1	Introduction: Role of ground improvement in foundation engineering, geotechnical problems in alluvial, Stabilization of Soils: Clay Chemistry, Reaction Dynamics, Methods of soil stabilization, clay salt interaction												CO1	
UNIT-2	Theory of Vibration: Harmonic Motion, Vibrations of single Degree Freedom system, Earthquake Loading Methods: Insitu densification of cohesionless soil, vibrofloatation, Sand pile compaction, stone columns and Three-Dimensional Consolidation of clay, lime piles												CO2	
UNIT-3	Drainage and Dewatering: Vacuum and electro osmotic methods, criteria for choice of filler material around drains, Seepage analysis(simple case only)												CO3	
UNIT-4	Reinforced soil: Basic components, soil reinforcement interface friction, Internal and external stability												CO4	
UNIT-5	Foundation of Reinforced soil bed: Analysis of strip footing on reinforced soil bed; Analysis of isolated square footing on reinforced soil bed, Ultimate bearing capacity of footing on reinforced earth slab												CO5	
Learning Resources														
Text Books	<ol style="list-style-type: none"> Ground Improvement Techniques, Purushotham Raj, Laxmi Publications, New Delhi. Ground Improvement Techniques, Nihar Ranjan Patro, Vikas Publishing House (p) limited , New Delhi. An introduction to Soil Reinforcement and Geosynthetics, G. L. Siva Kumar Babu, Universities Press. 													
Reference Books	<ol style="list-style-type: none"> Ground Improvement, M.P. Moseley, Blackie Academic and Professional, USA. Designing with Geosynthetics, R. M Koerner, Prentice Hall 													
e-Resources&	https://www.youtube.com/playlist?list=PLbMVogVj5nJRb_yA6oMKfoT89hyUcuHIA													

other digital material	
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