

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Bachelor of Technology			Branch/Spec.		Civil Engineering		
Semester		VII			Version		2.0.0.0		
Effective from Academic Year			2016-17		Effective for the batch Admitted in			2014-15	
Subject code		2CI712		Subject Name		ELECTIVE PAPER – I (ADVANCED GEOTECHNICAL ENGINEERING-I)			
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3		1		4	Theory	40	60	100
Hours	3		2		5	Practical	35	15	50
Pre-requisites:									
Learning Outcome:									
After Completion of the Curriculum of this subject students can able to understand thorough concept of foundation design according to the soil stratum above which the foundation will be rest. And also they may have idea about the improvement in soil bearing capacity by reinforcing the soil by using latest software available in the market and advancement in the technology of reinforcing the soil and foundation design.									
Theory syllabus									
Unit	Content								Hrs
1	Overview of foundation design : Types of soil test & their relevance, interpretation of test data such as SPT, PLT, CPT obtained from investigation, use of geotechnical investigation report. Critical study of different bearing capacity theories, foundation on slopping ground, bearing capacity for two layered clayey soil system based on IS, Design principles & methods of raft foundation, bearing capacity of rock.								6
2	Deep foundation : Study of pile foundations in details, single piles in sand & clay, α & β method, group of piles, pile groups in cohesive and granular soils, cyclic pile load test and interpretation. pile heave and its effect on load carrying capacity and solution, uplift capacity of the pile and pile group, laterally loaded piles, better piles. well foundation: Components of well, force acting on well, grip length of well, design principles and stability analysis.								11
3	Foundations for Machines : Introduction to type of machines & machine foundation. Concept of natural frequency &								11

	amplitude, understanding of damping & resonance, general design criteria and requirements of machine foundation for reciprocating type, impact type, and rotary type machine as per IS. Barkan's Method. Determination of dynamic properties of soil by CPLP& block vibration test. Vibration isolation.	
4	Introduction to reinforced earth structure and Geosynthetics Reinforced earth mass, fundamental concept, design of REM wall, over view of geosynthetic material, properties & test methods of geotextile material, functional requirement & designing with geosynthetics: Applications of synthetics, reinforced earth retaining wall, types and design concepts of reinforcement, properties, placement of reinforcement, elements of soil anchors..	5
5	Applications of Software (CASTER) in Geotechnical Engineering.	6
Practical content		
The term work shall consist of assignments and seminar based on case studies (minimum 30 problems & Seminar) based on the course of study under Geotechnical Engineering-II. Practical examination shall consist of oral based on term work.		
Text Books		
1	Murthy V.N.S.; Soil Mechanics & Foundation Engg Vol.II	
2	Kaniraj S.R. ; Design Aids on Soil Mechanics & Foundation Engineering	
Reference Books		
1	IS:6403 – Code of practice for determination of bearing capacity of shallow foundation	
2	IS:2911 (Part I to IV) – Code of practice for design and construction of pile foundation	
3	IS:1888 – Method of load test on soil	
4	IS:1904– Code of practice for structural safety of buildings: Shallow Foundations	
5	IS:2974 – Code of practice for design & construction of machine foundations	
6	Purushothama Raj P.; Ground Improvement Techniques	
7	Nainan P. Kurian; Modern foundation: Introduction to advanced techniques	
8	Teng W.C.; Foundation Design	