GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology		Branch/Spec.	Civil Engineering	
Semester	VIII		Version	2.0.0.0	
Effective from Academic Year	2019-20		Effective for the batch Admitted in		2014-15
Subject code	2CI812	Subject Name	**ELECTIVE PAPER – II (ADVANCED GEOTECHNICAL ENGINEERING-II)**		

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:

ELECTIVE PAPER – I (ADVANCED GEOTECHNICAL ENGINEERING-I)

Learning Outcome:

After Completion of the Curriculum of this subject students can able to understand thorough concept of shear parameters and shear strength of the soil beneath the foundation and settlement characteristics due to consolidation. Also they may have idea about the active and passive earth pressure which are very important parameters considered in the design of earth retaining structures.

Theory syllabus

Unit	Content	Hrs
1	**Shear strength :** Review of conventional shear tests and factors affecting shear strength of soil. Triaxial test under different drainage conditions, Skempton's pore pressure parameters, sensitivity-thixotropy, critical void ratio, liquefaction phenomenon, its condition and preventive measures, Hvorslev's shear strength parameters, stress paths, Lambe's stress paths, stress paths for different field conditions.	10
2	**Consolidation & Settlement Analysis :** Pre-consolidation pressure, Consolidation Ratio, Derivation and solution of Terzaghi's one-dimensional consolidation theory, Isochrones, extrapolation of field consolidation curve, secondary compression, estimation of immediate and consolidation settlement, factors affecting settlement, correction to computed settlement, introduction to three dimensional consolidation, sand drains, sand wicks, band drains.	10
3	**Earth Pressure :** Critical study of earth pressure theories, Coulomb wedge analysis, active and passive earth pressure determination by graphical methods, earth pressure due to line load & surcharge acting on ground surface, earth pressure on strutted excavations, cantilever sheet pile wall, anchored sheet pile, Free earth support and fixed earth support.	10

4	**Special foundations** : Over view of foundation for water tanks & silos, telecommunication tower, foundation for under- ground structure like tunnels & power house	5
5	**Ground Improvement Techniques:** Necessity, different methods such as preloading and sand drains, vibroflotations, stone columns, blasting, and compaction piles, Electro-Osmosis, introduction to use of fly ash.	4

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	Robert M. Koerner ; Designing with Geosynthetics
2	Whitlow K; Basic Soil Mechanics
3	JumikisAlfreds R; Soil Mechanics
4	Das Braja M; Principles of Foundation Engineering
5	GopalRanjan, Rao A.S.R., Basic & applied Soil Mechanics
6	Purushothama Raj P.; Ground Improvement Techniques
7	Nainan P. Kurian; Modern foundation: Introduction to advanced techniques
8	Teng W.C.; Foundation Design