SE508: Advanced Foundation Engineering

Teaching Scheme			Credits	Marks Distribution				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	5	70	30	30	20	150

Course Content:

Sr. No	Topics	Teaching Hrs.
1	**Introduction:** General requirements, bearing capacity computations, settlement computations, use of field tests like SPT as per relevant IS code.	06
2	**Shallow Foundations:** Shallow foundations: different types, proportioning of footings for equal contact pressures, eccentrically loaded footings, soil design of combined footings, strap footing, C.P under rigid and Flexible footing.	06
3	**Rafts:** Different types, bearing capacity and settlement computations of raft concept of floating foundation buoyancy raft, Modulus of subgrade reaction.	06
4	**Pile Foundation:** Vertical and lateral load capacity of a pile, settlement analysis of pile group, under reamed piles, IS code provisions, pile load test, Piled raft foundation and analysis.	11
5	**Well Foundations:** Different types, stability analysis and basic concepts.	03

6	**Dynamic Analysis of Foundations:**	10
	Dynamic soil properties, natural frequency of machine foundation-soil system, different types of machine foundations, static and dynamic criteria for soil-foundation system, design of block foundations per IS code.	
	Total Hrs.	**42**

Reference Books:

1. Kaniraj S R, "*Design Aids in Soil Mech. And Foundation Engineering*", Tata McGraw Hill.
2. Swami Saran, Gopal Ranjan, "*Analysis & Design of Foundations & Retaining Structures*", Sarita Prakashan.
3. Nainan P Kurian, "*Design of Foundation Systems:Principles and Practices*", Narosa Pub. House. New Delhi.
4. J. E. Bowles, "*Analysis and Design of Foundation*", McGraw Hill International Editions.
5. Waney C. Teng, "*Foundation design*", Prentice Hall of India Private Limited New Delhi.
6. Braja M. Das, "*Principles of Foundation Engg*", Cengage Learning.
7. M. J. Tomlinson, "*Pile Design and Construction Practice*", CRC Press.
8. H. Y. Fang, "*Handbook of Foundation Engg*", Springer Science.