

## SE653: Soil Structure Interaction

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

### Course Content:

Sr. No	Topics	Teaching Hrs.
1	<p><b><u>Introduction:</u></b></p> <p>Basic concept of soil structure interaction, factors affecting contact pressures; sub grade modulus-determination and factors; contact pressure by theory of elasticity, contact pressure by modulus of sub grade reaction.</p>	09
2	<p><b><u>Beam on Elastic Foundation:</u></b></p> <p>Flexible analysis of a combined footing by finite difference method and by finite element method.</p>	09
3	<p><b><u>Earthquake Response of Soils and Foundations:</u></b></p> <p>Measurement of dynamic soil properties; strength of cyclically loaded soils.</p> <p><b><u>Liquefaction:</u></b></p> <p>Liquefaction effects, types and factors; evaluation of liquefaction potential; mitigation methods viz. vibro techniques, dynamic compaction, blasting compaction grouting, stone columns, compaction piles, grouting and mixing techniques, drainage methods etc.</p>	08
4	<p><b><u>Geogrid and Geosynthetics:</u></b></p> <p>Types, functions, applications, Various methods for Reinforced Earth designs, installation and applications.</p>	10
5	<p><b><u>Flexible Retaining Structures:</u></b></p> <p>Analysis by free earth support method.</p>	06
<b>Total Hrs.</b>		<b>42</b>

**Reference Books:**

1. Swami Saran, Gopal Ranjan, "*Analysis & Design of Foundations & Retaining Structures*", Sarita Prakashan.
2. Nainan P Kurian, "*Design of Foundation Systems*", Narose Pub. House.
3. J. E. Bowles, "*Foundation Analysis and Design*", McGraw Hill
4. Koerner R M, "*Designing with Geosynthetics*", Prentice Hall.
5. S. L. Kramer, "*Geotechnical Earthquake Engineering*" PEARSON Education, Prentice Hall.