

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: III

Civil Engineering (Structural Engineering)

Subject Name: **Soil Structure Interaction (Major Elective - IV)**

Sr.No	Course content
1.	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.
2.	Beam on elastic foundation: flexible analysis of a combined footing by finite difference method and by finite element method.
3.	Earthquake response of soils and foundations; measurement of dynamic soil properties; strength of cyclically loaded soils; 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.
4.	Geogrid and geosynthetics: types, functions, applications, Various methods for Reinforced Earth designs, installation and applications.
5.	Flexible retaining structures: analysis by free earth support method.

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.