GROUND IMPROVEMENT TECHNIQUES
(ELECTIVE – II)

Course Code : 13CE1135

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Course Educational Objectives:
❖ Basic knowledge on various ground improvement techniques and their suitability for various types of soil conditions.
❖ The skills of implementation of geotechnical knowledge in field situations.
❖ Knowledge of reinforcement to soils in the form of geo textiles and other synthetic materials.

Course Outcomes:
❖ Student will be able to understand soil dewatering techniques with respect to field conditions.
❖ Student will be able to understand grouting techniques with respect to field conditions.
❖ Student will be able to understand soil dewatering techniques with respect to field conditions.
❖ Student will be able to understand and design principles of reinforced soil walls.
❖ Student will be able to understand geo synthetics and their field applications.

UNIT-I
(12 Lectures)
DEWATERING:
Methods of de-watering- Sumps and Interceptor Ditches- Single, Multi stage well points - Vacuum well points- Horizontal wells- Foundation drains-Blanket drains- Criteria for selection of fill material around drains–Electro-osmosis.
UNIT-II (10 Lectures)
GROUTING:
Objectives of grouting- Grouts and their properties- Grouting methods- Ascending, Descending and Stage Grouting- Hydraulic fracturing in soils and rocks- Post grout test.

UNIT-III (14 Lectures)
IN SITU DENSIFICATION METHODS IN GRANULAR SOILS & COHESIVE SOILS:
Vibration at the ground surface, Impact at the Ground Surface, Vibration at depth, Impact at depth, preloading or dewatering, Vertical drains – Sand Drains, Sand wick geo drains – Stone and Lime columns – Thermal methods.

UNIT-IV (10 Lectures)
REINFORCED SOIL:
Principles – Components of reinforced soil – Factors governing design of reinforced soil walls – Design principles of reinforced soil walls.

UNIT-V (12 Lectures)
GEO SYNTHETICS & METHODS OF STABILIZATION:

TEXT BOOKS:
REFERENCES:

