GEOSYNTHETICS AND REINFORCED SOIL STRUCTURES

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INTENDED AUDIENCE : Two basic courses in geotechnical engineering at UG level that covers fundamentals of soil mechanics and designs of retaining walls, slope stability analysis and foundations is the required background for this course.

COURSE OUTLINE :
This course will dealt with the geosynthetics as construction materials in civil engineering projects. It will introduce the concept of geosynthetics, their manufacture and their behavior and their applications in different civil engineering designs. The support for the course will be in the form of pre-recorded videos, power point slides and supplementary reading materials given every week.

ABOUT INSTRUCTOR :
Prof. K. Rajagopal joined as an Adjunct Professor at Andhra University, Visakhapatnam after retirement from the services of IIT Madras (Department of Civil Engineering). He has more than 25 years of experience with teaching and research in geosynthetics and reinforced soil structures.

COURSE PLAN :

Week 1**:** Introduction to Geosynthetics

Types of geosynthetics and their applications

Manufacture of geosynthetics

Week 2**:** Strength of reinforced soils

Testing of Geosynthetics

Week 3**:** Different Types of Soil Retaining Structures

Construction Aspects of Geosynthetic Reinforced Soil Retaining Walls

Design Codes for Reinforced Soil Retaining Walls

Week 4**:** External Stability Analysis of Reinforced Soil Retaining Walls

Seismic Loads and Internal Stability Analysis of Reinforced Soil Walls

Testing Requirements for Reinforced Soil Retaining Walls

Week 5**:** Design of Reinforced soil Retaining walls - simple geometry

Design of reinforced soil retaining walls – sloped backfill soil

Design of reinforced soil retaining walls supporting a bridge abutment

Week 6**:** stability analysis of soil slopes- Infinite slopes

Stability analysis of reinforced soil slopes resting on soft foundation soils

Stability analysis of reinforced soil slopes resting on strong foundation soil

Week 7**:** stability analysis of reinforced soil slopes - bilinear wedge analysis

Design of Embankments supported on Load Transfer Platforms

Week 8**:** Reinforced soil for supporting shallow foundations

Week 9**:** Accelerated consolidation of soft clays using geosynthetics

Geosynthetic encased stone columns for load support

Week 10**:** Drainage application of geosynthetics

Filtration Applications of Geosynthetics

Week 11**:** Erosion control using geosynthetics

Natural geosynthetics and their applications

Week 12**:** Geosynthetics for construction of municipal and hazardous waste landfills