

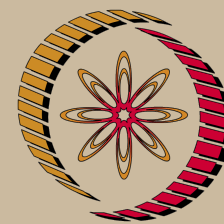
# Geosynthetics Engineering In Theory and Practice - Video course

## COURSE OUTLINE

- Background of reinforced earth, mechanism and concepts, Basis of reinforced earth wall design.
- Geosynthetics classifications, functions, applications, raw materials used. Different types of Geosynthetics, manufacturing, system, Design and sustainability.
- Various properties of Geosynthetics, physical properties, mechanical properties, hydraulic properties & endurance properties, Nano material.
- Mechanism of filtration and drainage functions & their applications, Design step for erosion control and geocomposite drainage.
- Mechanisms and concept of pavement, design of unpaved road, Giroud and Noiray method, U.S. Forest services, airfield pavement design, reflection cracking, pavement rehabilitation and repair, Nano material.
- Different types of facing elements, construction procedure, cost, design of Geosynthetics wrap around faced wall, geogrid reinforced soil walls, geocell wall, gabion wall.
- Model for single and multi-layer reinforced slopes, guidelines for design of reinforced slopes, software for reinforced soil slopes.
- Design of basal reinforced embankment, placement of Geosynthetics, construction procedure, widening of existing road embankments.
- Consolidation techniques, Development of design chart for prefabricated vertical drains, ground instrumentation and monitoring, Design of encased stone columns, geocell/geofoam systems.
- Bearing capacity of Geosynthetics reinforced soil system, geocell reinforced sand overlaying soft clay.
- Geotextile tubes, geotextile containers, geotextile bags, dewatering waste and contaminated sediments, installation and design of geotextile tube.
- Design of landfill liner, veneer slope stability without and with seismic analysis, run out length, settlement of landfill, advantage of LSS model.
- Applications, advantage, function of geofoam, physical, mechanical and thermal properties of geofoam, design of embankment using geofoam, geofoam reinforced soil walls, New light weight fill material.

## COURSE DETAIL

Module No.	No. Of Lecture
Module No.1	5
Module No.2	4
Module No.3	5
Module No.4	5



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<http://nptel.ac.in>

## Civil Engineering

### Pre-requisites:

Viewer's Knowledge of Basic Soil Mechanics and Foundation Engineering/ Geotechnical Engineering

### Additional Reading:

International/ National Journals, Conferences etc. and any other books/ texts related on Geosynthetics and other related products

### Coordinators:

**Prof. J. N. Mandal**  
Department Of Civil Engineering IIT Bombay

Module No.5	6
Module No.6	10
Module No.7	4
Module No.8	3
Module No.9	7
Module No.10	1
Module No.11	2
Module No.12	5
Module No.13	6
Total	63

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**References:**

- Koerner, R. M. (2012). Designing with Geosynthetics, 6th Edition, Vol. 1 and 2, Xlibris corp., 914 p.
- Giroud, J. P. (1984). "Geotextiles and Geomembranes. Definitions, Properties and Design," Selected Papers, Revisions and Comments, 4th ed., IFAI Publishers, 325 p.
- Holtz, R. D., Christopher, B. R. and Berg, R. R. (1997) Geosynthetic engineering, Bitech publishers Ltd., 452p.
- Hausmann, M. R. (1990). Engineering Principles of Ground Modification, McGraw-Hill Publishing Company, New York, 632 p.
- Ingold, T. S. (1982). Reinforced Earth, Thomas Telford Ltd., London, 141 p.