

S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
5	CE-702 (B)	Geosynthetics Engineering	PEC	3	2	1	0	50	100	150

Course Outcomes:

At the end of the course the students will be able to: -	
CO1	Describe the historical development of geosynthetics.
CO2	Assess the manufacturing methods.
CO3	Apply the concept in the construction of geosynthetics based structures.
CO4	Analyze erosion rate in Geogrids.
CO5	Design of Geosynthetics Reinforced Soil Structures.

Detailed Syllabus**Section-A**

Unit 1: Pro Basic Description of Geosynthetics: Historical Development, the Nomenclature, Function, Use around the World, Applications, Development in India. Raw Materials – Their Durability and Ageing: Raw Materials, Durability, Degrading Agencies, Polymers, Biological Resistance, Chemical Resistance, Weathering Resistance

(9 Hrs.)

Unit 2: Manufacturing Methods: Fibers, Yarn, Nonwoven Geotextiles, Woven Geotextiles, D.S.F. Fabrics. Geogrids- Testing and Evaluation: Factors influencing Testing, Sampling, Physical Properties, and Mechanical Properties under Uniaxial loading, Creep Testing.

(12 Hrs.)

Unit3: Application of Geosynthetics in Water Resource Projects: Case Study: Dharoidam, Hiran II Dam, Meda Creek Irrigation Scheme, Lining of Kakar par Canal.

(10 Hrs.)**Section-B**

Unit 4: Erosion Control with Geogrid: Wind Erosion, Rainwater Erosion, Erosion Control Measures, and Placement of Geogrid. Bearing Capacity Improvement with Geogrids: Advantages, Mechanism, and Modes of Failure, Friction Coefficient, and Experimental Studies.

(11 Hrs.)

Unit 5: Design of Geosynthetics Reinforced Soil Structures: Design construction of geo-synthetic reinforced soil retaining structures – walls slopes; Codal provisions; bearing capacity improvement; embankments on soft soils.

(11 Hrs.)**Textbooks**

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Textbook On Engineering with Geotextiles,	Rao G.V. & Rao G.V.S.,	Tata McGraw Hill	5th (2013)
2	Engineering with Geosynthetics	G.V. Rao & G.V.S.S. Raju	A A Balkema Publishers	5th (2004)

Reference Books

S.No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	INTRODUCTION TO GEOSYNTHETIC ENGINEERING	Sanjay Kumar Shukla	CRC Press	1st (2016)
2	Fundamental of Geosynthetics Engineering	Shukla, S.K. and Yin, J.H.	Taylor & Francis	6th (2021)