

19CE4801B - GEOSYNTHETICS

Course Category:	Program Elective	Credits:	3
Course Type:	Theory	Lecture-Tutorial- Practical:	3-0-0
Prerequisites:	19CE3405 - Geotechnical Engineering 19CE4705B-Ground Improvement Techniques	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	An overview of the evolution of new construction materials in geotechnical engineering and to initiate geosynthetic materials.	K2
CO2	Understand the properties geotextiles and geogrids.	K2
CO3	Understand the properties geomembranes and Geo-composites.	K2
CO4	Use geosynthetics on roads and design criteria.	K3
CO5	Understand availability and advantages of natural geosynthetics.	K2

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2		2										3	2
CO2	2		2										3	2
CO3	2		2										3	2
CO4	2		2										3	2
CO5	2		2										3	2
Avg.	2		2										3	2

1- Low

2-Medium

3-High

Course Content

UNIT-1	ROAD SAFETY TRENDS: Road accidents, Trends, causes, Collision diagrams ROAD SAFETY FACTORS: Human factors, road factors, driver factors; Speed and its effect on road safety; Vehicle factors	CO1
UNIT-2	STATISTICAL INTERPRETATION: Before-after methods in crash analysis, Recording of crash data; Accident Investigation and Analysis CRASH DATA ANALYSIS: Black Spot Identification Methods and Investigations: Multiple linear and logistic methods	CO2
UNIT-3	ROAD SAFETY AUDITS: Key elements of a road safety audit, Road Safety Audits & Investigations HAZARDOUS LOCATIONS: Methods for identifying hazardous road locations, Relevant IRC practices	CO3
UNIT-4	ROAD SAFETY MANAGEMENT SYSTEM: Multi-casual dynamic systems approach to safety; Road safety improvement strategies ELEMENTS OF A ROAD SAFETY: Elements of a road safety plan, Safety data Needs	CO4
UNIT-5	ENGINEERING & ENFORCEMENT MEASURES: Preventive and speed control measures ENGINEERING MEASURES: Education of road users and safety drives	CO5

Learning Resources

Text Books	1. Designing with Geosynthetics by Robert M. Koerner, Prantice Hall, Eaglewood
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	<p>Cliffs, NJ 07632.</p> <p>2. 'An Introduction to Soil Reinforcement and Geosynthetics' by G.L.Sivakumar Babu (2009), Universities Press (India) Pvt. Ltd.</p> <p>3. 'Engineering with Geosynthetics', by G. Venkatappa Rao and GVS Suryanarayana Raju – Tata McGraw Hill Publishing Company Limited – New Delhi.</p>
Reference Books	<p>1. 'Construction and Geotechnical Engineering using Synthetic Fabrics' by Robert M. Koerner and Joseph P. Welsh. John Willey and Sons, New York.</p> <p>2. 'Foundation Analysis and Design' by J.E. Bowles McGraw Hill Publications.</p>
e-Resources & other digital material	<p>1. https://nptel.ac.in/courses/105106055/</p> <p>2. http://jntuk-coeerd.in/</p>