

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	B Tech Civil Engineering
Course Code:	0CL001
Course Title:	Testing of Geotextile for Infrastructure applications
Course Type:	Value Added course
Year of Introduction:	2023-24

L	T	Practical Component				C
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Course Learning Outcomes (CLOs):

At the end of the course, the student will be able to –

1. examine physical properties of geotextile (BL4)
2. evaluate mechanical properties of geotextile (BL4)
3. assess hydraulic and endurance properties of geotextile. (BL3)

Syllabus:

Total Laboratory Hours:30

Unit	Content
Unit-I	Physical Properties of Geotextile Density, thickness, stiffness, mass per unit area.
Unit-II	Mechanical Properties of Geotextile Tensile strength tests: grab, wide width, narrow width, seam; fatigue strength, tear strength test, impact test, burst strength test, punching shear test, compressibility.
Unit-III	Hydraulic Properties of Geotextile Percent open area, apparent opening size, permittivity, transmittivity, gradient ratio, Long term flow test.
Unit-IV	Endurance Properties of Geotextile Creep test, ultraviolet/sunlight degradation test, abrasion test.

Note: The introduction to geotextile is included in the course of Geotechnical Engineering (2CL401). Laboratory session will include session(s) for theoretical background in each unit.



Self-Study:

The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/
References:

- Shukla, S. K. *Handbook of Geosynthetics Engineering*, Institutes of Civil Engineers (ICE).
- Venkatappa Rao, G., Banerjee P.K., Shahu J.T., Ramana G.V., *Geosynthetics: New Horizons*, Asian Books.
- Purshotum Raj, P., *Ground Improvement Methods*, Laxmi Publications.
- Saran, S., *Reinforced Earth and its Engineering Properties*, I. K. International Publication.
- Koerner, R.M., *Designing with Geosynthetics*, Vol. I & II, Prentice Hall.

Suggested List of Experiments:

Laboratory work will be based on above syllabus with minimum 08 experiments/exercises to be incorporated.

Suggested Case List:

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Suggested List of Experiments

Sr. No.	Name of Experiment	Hours
1	Density, thickness and mass per unit area of geosynthetics	04
2	Apparent Opening Size	02
3	Stiffness test of geosynthetics	02
4	Tensile strength of geosynthetics	06
5	Shearing strength of geosynthetics	04
6	Permittivity of geosynthetics	02
7	Transmittivity of geosynthetics	04
8	Ultraviolet/sunlight degradation test of geosynthetics	06