CVE – 414-L Geosynthetics Engineering

(Department Elective – III)

Name of the Faculty	:	Ms. Manju Godara
Discipline	:	B.Tech in Civil Engineering
Semester	:	VIII (4 th Year)
Subject	:	CVE-414-L, Geosynthetics Engineering
Lesson Plan Duration	:	15 Weeks
Work Load (Lecture / Tutorial) per week (in hrs.) :		Lectures – 03, Tutorial-01

Week	Theory		
vv eek	Lecture day	Topic (Including Assignment Test)	
1 st	1	Introduction to Geosynthetics Background of reinforced earth Basic description, mechanism and concept Historical Development of Geosynthetics	
	2	Nomenclature related to geosynthetics Function of geosynthetics	
	3	Use around the World Applications of geosynthetics Development in India	
2 nd	4	Geosynthetics classification, functions	
	5	Raw material used, different types of geosynthetics	
	6	Raw Materials: Polyester, Polypropylene, Polyethylene, HDPE, CPE, CSPE, PA, Nylon, PVC etc.	
3 rd	7	Their Durability and Ageing	
	8	Different types of geosynthetics: Geotextiles,	
	9	Geogrids, Geonets and Geo membranes Physical properties of geosynthetics	
4 th	10	Mechanical properties	
	11	Hydraulic – Permeability properties	
	12	Endurance Properties and Nano Material	
5 th	13	Degrading Agencies, Biological Resistance	
5	14	Chemical Resistance and Weathering Resistance	

	15	Abrasion resistance, Durability properties	
6 th	16	Melt flow index and asphalt retention	
		Manufacturing Methods of:	
	17	Fibers, Yarn, Nonwoven Geotextiles,	
	18	D.S.F. Fabrics Geogrids – Introduction, Applications	
7 th	19		
	20	MINOR TEST 1	
	21		
8 th	22	Tests on Geogrids: Aperture opening & Percent open area	
	23	Thickness of rib and junctions, Number of ribs per meter length test	
	24	Mass per unit area test, Tensile strength test	
9 th	25	Interface frictional strength: Shear and pullout	
	26	Connection strength between facing blocks and Geogrids	
	27	Sampling, Factors influencing Testing	
	28	Physical Properties	
10 th	29	Physical Properties	
	30	Mechanical Properties under Uniaxial loading Creep Testing	
11 th	31	Test on Geonets - I	
	32	Test on Geo membranes: thickness, density	
	33	Tensile strength / Elongation test, Permeability test	
12 th	34	Erosion Control with Geogrids: Wind Erosion, Rain Water Erosion	
	35	Erosion Control Measures, Placement of Geogrids	
		Bearing Capacity Improvement with Geogrids:	
	36	Reinforced soil system, Geocells	
13 th	37	Geofoam systems	
	38	Advantages, Mechanism, Modes of Failure	

	39	Friction Coefficient,
		Experimental Studies
14 th	40	
	41	MINOR TEST – II
	42	
15 th	43	Application of Geosynthetics in Water Resource Projects: Case Study
		Dharoidam,Hiran II Dam
	44	Dharoidam,Hiran II Dam
	45	Meda Creek Irrigation Scheme Lining of Kakarpar Canal