PEAGT524	WATERHARVESTING STRUCTURES	Category	L	T	P	R	Credit	Year of Introduction
		ESC	3	0	0	0	5/3	2025

Preamble: The objective of the course is to impart knowledge and skills relevant to water conservation and management towards achieving the sustainability in water resources and relate the engineering principles and practices in estimation of runoff, storage, recharge into the ground and maintain the system through the best management practices followed around the world

Prerequisite:Nil

CourseOutcomes:After the completion of the course,the student will be able to:

CO1	Explain the need and importance of water conservation through rainwater harvesting.	**K2**
CO2	Explain the concepts of hydrology and ground water in the estimation of run off.	**K2**
CO3	Describe various types of rainwater harvesting methods and apply it on the field	**K2**
CO4	Design the various RWH structures to harvest the rainwater.	**K3**
CO5	Explain the difficulties of RWH,evaluation methods and maintenance.	**K2**

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Mapping of course outcomes with program outcomes and program specific outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	–	–	1	2	2	2	1	1	1	2	2	2
CO2	3	3	2	2	3	2	1	1	1	1	2	2	2	2
CO3	2	2	2	2	2	2	2	1	1	1	1	2	2	2

CO4	3	2	3	3	3	3	2	2	2	1	3	2	3	3
CO5	2	3	2	2	2	2	2	2	2	1	2	2	3	3
Avg	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**	**2**	**2**	**2**

AssessmentPattern

Bloom'sCategory	**Test1(%)**	**Test2(%)**	**End Semester ExaminationMarks (%)**
Remember			
Understand	40	40	40
Apply	60	60	60
Analyse			
Evaluate			
Create			

MarkDistribution:

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TotalMarks	CIEMarks	ESEMarks	ESEDuration
100	40	60	3 hrs

ContinuousInternalEvaluationPattern:

- Attendance:5marks
- InternalEx:15 marks
- Evaluate:10marks
- Analyze:10marks
- Total:40marks

SYLLABUS

Module1-BASICSOFRainwaterharvesting

Water and its sources-Need for water conservation–Types of waterd emand-Conservation Methods - Global and Indian perspectives - National mission and goals towards rainwater harvesting – National water policy - Legislation on rainwater harvesting in India and Tamil Nadu.

Module2-HYDROLOGY AND GROUNDWATER

Hydrological cycle – Precipitation - Rainfall measurement - Rain-gauges – Hyetograph - Infiltration - Runoff estimation – Rooftop runoff estimation. Ground water - Aquifer Properties –
Darcylawandwellhydraulics-Steadyflow.

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Module3-METHODS OF RAINWATER HARVESTING

Rainwater harvesting potential of an area - Traditional harvesting practices – Rooftop harvesting - Methods of RWH structures – Site selection for rainwater harvesting - Surface runoff Harvesting - Ground water recharge - Artificial recharge.

Module4-DESIGN OF RAINWATER HARVESTING STRUCTURES

Design Considerations - Components of Rainwater harvesting system - Simple roof water collection system-Design of Storage structure-Design of Recharge structures–Recharge pit - Recharge trench-Recharge well-Gullyplug-Percolationtank-Checkdam-Recharge shaft - Efficiency of RWH system,Design of farmpond.

Module5-MANAGEMENTOFRWHANDCASESTUDIES

Importance of community participation in water conservation,Sustainable waterpolicies and practices,Difficulties in RWH-Atcatchment level-At household level-Evaluation of RWH systems Maintenance of RWH structures - Modernization of RWH system.

TextBooks:

1. Water Management Conservation Harvesting and Artificial Recharge byDrASPatel,Jain Book Depot.
2. Rainwater Harvesting by ChandrawatiJee,APHPublishingCorporation.
3. Rainwater Harvesting byInderJeet,MittalPublications.

ReferenceBooks:

1. Designing Rainwater Harvesting Systems:Integrating Rainwater into Building Systems by Novak C A, Van Geisen, Eddie, DeBusk, Kathy M., John Wiley & Sons Inc, 2014.

2. Water Resources Management by K NageswaraRao,JainBookDepot.

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