

### 20CE4703D -WATERSHED MANAGEMENT

<b>Offering Branches</b>	CE	<b>Credits:</b>	3
<b>Course Category:</b>	Professional Elective	<b>Lecture-Tutorial-Practical:</b>	3-0-0
<b>Course Type:</b>	Theory	<b>Continuous Evaluation:</b>	30
<b>Prerequisites:</b>	20CE3405 - Water resource engineering	<b>Semester End Evaluation:</b>	70
		<b>Total Marks:</b>	100

#### Course Outcomes

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

<b>CO1</b>	<b>Understand</b> the concept of watershed development and approaches in India	K2
<b>CO2</b>	<b>Understand</b> the principle and <b>apply</b> the universal soil loss equation to estimate soil erosion	K3
<b>CO3</b>	<b>Understand</b> rain water harvesting techniques and <b>apply</b> concepts in daily life	K3
<b>CO4</b>	<b>Understand</b> various concepts of artificial recharge and able to implement	K3
<b>CO5</b>	<b>Understand</b> and <b>analyze</b> the bio mass management activities	K4

#### Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	1	1		1			2				2			2
<b>CO2</b>	2	2		2			2				2			2
<b>CO3</b>	3	3	3	3			2				2	2		2
<b>CO4</b>	2	2	2	2			2				2	2		2
<b>CO5</b>	2	2	2	2			3				3	3		3
<b>Avg.</b>	2	2	2	2			2				2	2		2

1- Low

2-Medium

3-High

### Course Content

<b>UNIT-1</b>	<b>Introduction:</b> concept of watershed, need for watershed management, concept of Sustainable development. Hydrology of small watersheds.	CO1
<b>UNIT-2</b>	<b>Soil Management:</b> Principles of soil erosion, causes of soil erosion, types of soil erosion, estimation of soil erosion from small watersheds. Control of soil erosion, methods of soil conservation – structural and non-structural measures.	CO2
<b>UNIT-3</b>	<b>Water Harvesting:</b> Principles of water harvesting, methods of rainwater harvesting, rainwater harvesting structures, farm ponds and percolation tanks	CO3
<b>UNIT-4</b>	<b>Artificial recharge :</b> Artificial recharge of groundwater in small watersheds, methods of artificial recharge. Reclamation of saline soils.	CO4
<b>UNIT-5</b>	<b>Bio Mass Management:</b> Micro farming, biomass management- dry land agriculture , silvi -pasture horticulture, social forestry and afforestation- Case studies of Watershed Management.	CO5

### Learning Resources

<b>Text Books</b>	1. Murthy, V.V.N., Land and Water Management, Kalyani Publishers.
<b>Reference Books</b>	1. Chatterjee, S. N., Water Resources Conservation and Management, Atlantic Publishers. 2. Muthy, J. V. S., Watershed Management, New Age International Publishers. 3. Suresh Rao, Soil and Water Conservation Practices, Standard Publishers
<b>e- Resources &amp; other digital material</b>	1. <a href="https://mptel.ac.in/courses/105/101/105101010/">https://mptel.ac.in/courses/105/101/105101010/</a> 2. <a href="http://www.nptelvideos.in/2012/11/watershed-management.html">http://www.nptelvideos.in/2012/11/watershed-management.html</a>