WATERSHED MANAGEMENT
(Professional Elective- III)

Course Code: 20CE1161   **L T P C**
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Pre-requisites:

Course Outcomes:
At the end of the course, the student will be able to:
CO1: Describe the concepts of watershed development
CO2: Explain the reasons for the erosion from the watershed and the methods to control it
CO3: Explain the methods of water harvesting
CO4: Discuss about land use management
CO5: Describe the role of ecosystem in bringing the best water use practices and apply the knowledge to plan watershed development activities

UNIT-I   (10 Lectures)

INTRODUCTION:

Concept of watershed development, objectives of watershed development, need for watershed development in India, Integrated and multi-disciplinary approach for watershed management.

CHARACTERISTICS OF WATERSHED:

Size, shape, physiography, slope, climate, drainage, land use, vegetation, geology and soils,hydrology and hydrogeology, socioeconomic characteristics, basic data on watersheds.

Learning outcomes:
1. Describe the concept and objectives of watershed development (L2)
2. Identify the need for watershed development in India (L2)
3. Explain different characteristics of watershed (L2)

UNIT-II   (10 Lectures)

EROSION AND ITS CONTROL:

Types of erosion, factors affecting erosion, effects of erosion on land fertility and land capability, estimation of soil loss due to erosion, Universal soil loss equation; Measures to control erosion: Contour techniques, ploughing, furrowing, trenching, bunding, terracing, gully control, rock fill dams, brushwood dam, Gabion.

Learning outcomes:
1. Discuss soil erosion (L2)
2. Identify causes of soil erosion (L2)
3. Explain measures to control soil erosion (L2)

UNIT-III (10 Lectures)

WATER HARVESTING:

Rainwater Harvesting, catchment harvesting, harvesting structures, soil moisture conservation,check dams, artificial recharge, farm ponds, percolation tanks.

Learning outcomes:
1. Identify the need of water harvesting (L2)
2. Explain the concept of water harvesting (L2)
3. Demonstrate different harvesting structures (L2)

UNIT-IV (10 Lectures)

LAND MANAGEMENT:

Land use and Land capability classification, management of forest, agricultural, grassland andwild land. Reclamation of saline and alkaline soils.

Learning outcomes:
1. Discuss land use classification (L2)
2. Explain land management practices for various land use/land cover (L2)
3. Describe measures for reclamation of saline soils (L2)

UNIT-V (10 Lectures)

ECOSYSTEM MANAGEMENT:

Role of Ecosystem, crop husbandry, soil enrichment, inter, mixed and strip cropping, cropping pattern, sustainable agriculture, bio-mass management, dry land agriculture, Silvi pasture, horticulture, social forestry and afforestation.

WATERSHED MANAGEMENT:

Planning of activities, people's participation, preparation of action plan, administrative requirements.

Learning outcomes:
1. Discuss the role of ecosystem in watershed management (L2)
2. Identify the need of sustainable agriculture (L2)
3. Apply the knowledge to plan the watershed development activities (L3)

TEXT BOOKS:

1. J. V. S. Murty, "Watershed Management", 2nd Edition, New Age International Publishers,2013.
2. R.A. Wurbs and WP James, "Water Resource Engineering", 3rd Edition Prentice Hall ofIndia, 2002

REFERENCES:

1. V.V.N. Murthy and Madan K Jha. "Land and Water Management", 6th Edition, KalyaniPublishers, 2015.
2. D.K. Majumdar, "Irrigation Water Management", 3rd Edition, Prentice Hall of India, 2004.