4/4 B.Tech. EIGHTH SEMESTER

CE8T4C	**WATERSHED MANAGEMENT**	**Credits: 3**
Lecture: 3 periods/week		**Internal assessment: 30 marks**
Tutorial: 1 period /week		**Semester end examination: 70 marks**

Pre-requisites: Water resources engineering, geo technology, surveying

Learning objectives:

- To be able to develop watershed management program for proper use of all available resources of a watershed
- To know optimum production with minimum hazards to natural resources.

Course outcomes:

After the exposure to the subject, student is able to:

1. Understand the concept of water shed development and approaches in India
2. Evaluate the amount of soil loss by equation.
3. Plan rain water harvesting techniques
4. Classify the ecosystem management of crop, soil, agriculture and forests
5. Ability to support communities to integrate community watershed planning.

UNIT - I

INTRODUCTION

Concept of watershed development, objectives of watershed development, need for watershed development in India-Approach for watershed management-Integrated and multidisciplinary approach

CHARACTERISTICS OF WATERSHED

Size, shape, physiographic, slope, climate, drainage, land use, vegetation, geology and soils, hydrology and hydrogeology, socio-economic characteristics, basic data on watersheds

UNIT-II

PRINCIPLES OF EROSION

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

UNIT-III

WATER HARVESTING

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

LAND MANAGEMENT

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

UNIT-IV

ECOSYSTEM MANAGEMENT

Role of Ecosystem, crop husbandry, soil enrichment, inter, mixed and strip cropping, cropping pattern, sustainable agriculture

BIO-MASS MANAGEMENT

Bio mass-dry land agriculture, Silvi pasture, horticulture, social forestry and afforestation.-firewood-synthetic fuels-conservation-indirect methods

UNIT-V

WATERSHED MANAGEMENT ACTIVITIES

Planning of watershed management activities, people's participation, preparation of action plan, administrative requirements –Case studies

IMPACT

Model watershed; government projects; Society For Promotion Of Watershed Development-ICRISAT-World bank projects

Learning resources:

Text Books:

1. Watershed Management, (2nd edition) by Murthy JVS., New Age International Publishers. New Delhi, 2004.
2. Water Resource Engineering by Awurbs, R and James WP., Prentice Hall Publishers, 2001.

Reference books:

1. Land and Water Management, (6th edition) by Murthy VVN., Kalyani Publications, 2011.
2. Irrigation and Water Management by Majumdar D.K., Prentice Hall of India, 2000.

e-learning resources:

NPTEL