| Year & | Course | Course Name: Water Shed | No. of | L | T&PS | P |
|--------|--------|-------------------------|------------|---|------|---|
| Sem | Code: | Management | Credits: 4 | 2 | 2 | 0 |
| | CE3508 | | | | | |

UNIT – I: Introduction and Basic Concepts

Concept of watershed, introduction to watershed management, different stakeholders and their relative importance, watershed management policies and decision making.

UNIT – II: Sustainable Watershed Approach & Watershed Management Practices:

Sustainable integrated watershed management, natural resources management, agricultural practices, integrated farming, Soil erosion and conservation;

Watershed Management Practices in Arid and Semiarid Regions, Case studies, short term and long term strategic planning.

UNIT – III: Integrated Watershed Management:

Introduction to integrated approach, Integrated water resources management, conjunctive use of water resources, rainwater harvesting; roof catchment system.

Watershed Modeling:

Standard modeling approaches and classifications, system concept for watershed modeling, overall description of different hydrologic processes, modeling of rainfall-runoff process, subsurface flows and groundwater flow.

UNIT-IV:Social Aspects of Watershed Management:

Community participation, Private sector participation, Institutional issues, Socio-economy, Integrated development, Water legislation and implementations, Case studies.

Use of modern techniques in watershed management:

Applications of Geographical Information System and Remote Sensing in Watershed Management, Role of Decision Support System in Watershed Management

UNIT-V: Management of Water Quality:

Water quality and pollution, types and Sources of pollution, water quality modeling, environmental guidelines for water quality

Storm Water and Flood Management:

Storm water management, design of drainage system, flood routing through channels and reservoir, flood control and reservoir operation, case studies on flood damage.

UNIT-VI: Drought Management:

Drought assessment and classification, drought analysis techniques, drought mitigation planning

Water Conservation and Recycling:

Perspective on recycle and reuse, Waste water reclamation.

References/Text Books:

- 1. Allam, Gamal Ibrahim Y., Decision Support System for Integrated Watershed Management,< Colorado State University, 1994.
- 2. Black Peter E., Watershed Hydrology, Prentice Hall, London, 1991.
- 3. Michael A.M., Irrigation Engineering, Vikas Publishing House, 1992.
- 4. Murty, J.V.S. "Watershed Management", New Age Intl., New Delhi 1998.
- 5. Murthy, J.V.S., Watershed Management in India, Wiley Eastern, New Delhi, 1994.
- 6. Purandare, A.P., Jaiswal A.K., Waterhed Development in India, NIRD, Hyderabad, 1995.
- 7. Vir Singh, Raj, Watershed Planning and Management, Yash Publishing House, Bikaner, 2000.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.