PCI7D001 Water Resources System and Management 3-0-0

Module I

Introduction to water resources systems : Elements of a water system, concept of a system, systems analysis techniques, issues in systems approach, advantages and limitations of systems approach, challenges in water sector.

Module II

Acquisition and processing of water resources data: Types of data, design of hydromet networks, data validation, acquisition and processing of precipitation and other meteorological data, acquisition and processing of stream flow data, water quality and other data, water resource information system. Emerging techniques of data acquisition and systems modelling.

Module III

System Techniques in Water Resources: Optimization using calculas, Linear programming, Dynamic programming and Simulation, Combination of Simulation and Optimization. Economic Considerations in Water Resources Systems: Basics of Engineering Economics, Economic Analysis, Conditions of project optimality, Benefit-cost Analysis.

Module IV

Environmental and social considerations: Water in environment, environmental impact of water resources projects, environmental impact of reservoirs, environmental problems in command areas, environmental impact assessment, sustainable development. Social impacts.

Books Recommended:

1. S K Jain and V P Singh. Water Resources Systems : Planning and Management.
2. Loucks, D. P., Stedenger, and Haith, D. A. – Water Resources Systems Planning & Analysis,
3. S Vedula and P P Majumdar. Water Resources Systems.
4. Ossenbruggen, P. J. – System Analysis for Civil Engineering, John Wiley, New York
5. Taha, H. –Operational Research-An Introduction, Vth Edn, Prentice Hall.
6. Prentice Hall.
7. Jain, S. K. and Singh, V. P. – Water Resources Systems Planning & Management, Elesvier,
8. Amsterdam
9. Water Resource System by Subhash Chander & Rajesh k Prasad
10. Water Resource System by P R Bhave