

Course syllabus

Department of Civil Engineering, Indian Institute of Technology Madras

CE5480- Water Resources Planning & mgmt

Credit Distribution: C:12 L:4 T:0 P:0 E:0 O:8 TH:12

Course Type: Theory

Description: Introduction: history of water resources development, water resources of India, problems and perspectives, conceptual framework. Economics of Water resources planning: benefit cost analysis of water resources projects, water pricing and water allocation, principles of planning and financing water resources projects. Water Law: riparian rights, groundwater ownership, prior appropriation, permit systems, acquisition and use of rights. Uncertainty concepts in Water Resources Planning: methods for uncertainty analysis and applications. Ground Water Management: inverse problem of parameter identification, management models embedding and response matrix approaches, optimal experimental design for parameter identification, conjunctive use of surface and ground water systems. Systems Analysis: systems concepts, conventional and evolutionary optimization techniques, interfacing optimizers with process simulators for design and management applications, applications to water resources planning and management problems. Water Quality Management in rivers, streams, and other water bodies. Flood mitigation and management: structural and nonstructural measures, optimal flood mitigation plan, flood damage estimation. Planning, design and management of irrigation, hydropower and flood control systems. Optimal planning and operation of single and multiple reservoirs, planning and development of multipurpose projects, decision support systems for water resources management, sustainable development of water resources. Coastal zone management. Use of GIS in Water Resources Planning..

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Text Books NIL

Reference Books : NIL

Prerequisite: NIL