



WATER ECONOMICS AND GOVERNANCE

PROF. MANOJ KUMAR TIWARI

Department of Civil Engineering
IIT Kharagpur

INTENDED AUDIENCE : UG students of Civil Engineering / Environmental Engineering (Elective) : PG students doing specializations in Environmental Engineering / Water Engineering / Agricultural Engineering (Core/Elective)

INDUSTRIES APPLICABLE TO : Jal Boards of various cities Companies working in water management sector, such as JUSCO, CH2MHill, Veolia Water, Phonix, WABAG etc.

COURSE OUTLINE :

Freshwater is fundamental to life, livelihood, and sustainable development. The issues related to the management of freshwater, are highly sensitive due to conflicts between financial, environmental, social and political viewpoints, and often needs multi-level governance involving various stakeholders.

This course aims to discuss the integrities of economics principles and governance for sustainable water management. The course will largely cover topics including the basics concept of sustainable water uses, water rights, valuing and pricing water with various pricing models, methods of economic evaluation of water projects, water governance in India including water policies and water acts, water disputes management, and global water diplomacy. The purpose of this course is to in stillin students the comprehensive knowledge and understanding on the governance of water in India and economics involved in water management.

ABOUT INSTRUCTOR :

Prof. Manoj Kumar Tiwari [Ph.D. (IIT Kanpur)] is a civil engg. graduate with specialization in environmental engg. and holds expertise in water and wastewater treatment, water distribution systems, water pricing, and contaminant fate and transport. He is a recipient of prestigious Fulbright Fellowship. Dr. Tiwari has co-authored several papers in apex international journals, and has presented his research in various top ranked conferences across the globe. Dr. Tiwari has over 8 years of teaching experience with both UG as well as PG level course. He has designed several new courses at IIT Kharagpur for Masters programme in Water Engineering and Management. He has delivered several invited lectures at various organizations, and has also conducted short-term course under Technical Education Quality Improvement Programme (TEQIP) with participants ranging from Faculties and Ph.D. students from NITs to field professionals working in government organizations as well as private companies.

COURSE PLAN :

Week 1: Introduction: General outline; Water availability and uses: national and international scenario; Challenges in water management.

Week 2: Water Rights: Need of water rights; Water and sanitation in international law; Right to Water; Entitlements and criteria.

Week 3: Water Sustainability: Concept of sustainable water uses; The Dublin statement; Sustainable water management with economical, engineering, ecological and social viewpoints; Stakeholders' participation.

Week 4: Valuing Water: The use and non-use values of water; Valuation methods; Non-revenue waters (NRW) and unaccounted for water (UFW); Metering water uses; Water management through economic instruments.

Week 5: Water Pricing - Approach and Models: Significance of water pricing; Average and marginal cost pricing; Shortrun marginal cost pricing; Water pricing models - flat rate, uniform rate, increasing block tariff and seasonal rate models.

Week 6: Conflicts in Water Pricing: Conflicts on subsidy verses sustainability, efficiency verses fairness in supply, development decisions verses capacity restrictions; Water pricing practices in India and abroad; relevant case studies.

Week 7: Economics of Water Projects: Economics of sectoral water allocation; Capital budgeting in water projects; Costs concepts of capital budgeting; Financial evaluation of water projects.

Week 8: Economic Evaluation Methods: Methods of project evaluation; Payback Period; Discounted Payback Period; Net Present Value; Internal Rate of Return; Average Rate of Return; Benefit-Cost Ratio.

Week 9: Water Governance: Elements and dimensions of water governance; Building blocks; Effective water governance schemes; Benchmarking water governance; Indicators of good governance.

Week 10: Water Governance in India: National water policies and water acts; Water regulatory authorities; Power and roles of central and state regulatory authorities; Legal and regulatory framework for hydro projects; Institutional arrangement and administrative controls of water service; Interstate water management initiatives; Stakeholders' participation; NGOs and social movements

Week 11: Water Disputes Management: Interstate and intrastate water disputes resolutions practices; Judiciary involvements; Tribunals for water disputes resolutions; Treaties and bilateral agreements; Environmental issues and disputes related to water resources projects; relevant case studies.

Week 12: Global Water Diplomacy: International freshwater agreements; Global water treaties and transboundary water agreements between the countries on international water resources; Multi-national water disputes and their resolution mechanisms; relevant case studies.