



# WATER SUPPLY ENGINEERING

**PROF. MANOJ KUMAR TIWARI**

School of Water Resources  
IIT Kharagpur

**TYPE OF COURSE** : New | Elective | UG/PG

**COURSE DURATION** : 12 weeks (27 Jan' 20 - 17 Apr' 20)

**EXAM DATE** : 26 Apr 2020

**PRE-REQUISITES** : Nil

**INTENDED AUDIENCE** : UG students of Civil Engineering / Environmental Engineering PG students doing specializations in Environmental Engineering / Water Engineering / Urban Planning / Architecture / Infrastructure (Core/Elective)

**INDUSTRIES APPLICABLE TO** : Municipal Corporations and Jal Boards of various cities, Public Health Engineering Departments, Companies working in water management sector, such as TCE, L&T, JUSCO, CH2MHill, Veolia Water, Phonix, WABAG, Vulture Innovations, Wipro Infra etc.

## **COURSE OUTLINE :**

Water supply schemes are a basic necessity of every town/city. With growing concerns over managing urban water demands along with resource sustainability, concept of efficient and smart urban water supply systems is progressively getting more pertinent. Incorporating sustainable design and operation principles based on innovative water technologies such as cost-effective treatment solutions, automated supervisory controls, leakage detection and control etc. into water supply systems improves water supply from sustainable perspectives. This course aims to discuss the technical aspects of modern systems for drinking water treatment and distribution in an integrated way. The course will cover topics from traditional aspects of demand calculations and source selections to the up-to-date treatment methods, network design tools etc. The course will also provide insight to smart water supply systems including automation, leakage detection. The financial sustainability of water supply systems and sustainable water pricing models will also be covered.

## **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. Prof. Tiwari has co-authored several papers in apex international journals, and has presented his research in various top ranked conferences across the globe. He 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 Master's 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 to field professionals working in government organizations as well as private companies.

## **COURSE PLAN :**

**Week 1:** Introduction: General outline of water supply; Water availability and uses

**Week 2:** Water Demand

**Week 3:** Water Intake

**Week 4:** Treatment Philosophy

**Week 5:** Water Quality and Treatment

**Week 6:** Conventional Water Treatment

**Week 7:** Water Treatment: Disinfection and Advanced Treatment

**Week 8:** Water Distribution Networks

**Week 9:** Water Losses and Control

**Week 10:** Advanced Water Distribution Design Approaches

**Week 11:** Automation in Water Supply

**Week 12:** Water Economics and Pricing