

5th Semester	RCI5C002	Water and Waste Water Engineering	L-T-P 3-0-0	3 Credits
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Module – I (08 Classes)

General requirement for water supply, sources, quality of water, intake, pumping and transportation of water.

Module – II (06 Classes)

Physical, chemical and biological characteristics of water and their significance, water quality criteria, water borne diseases, natural purification of water sources.

Module – III (08 Classes)

Engineered systems for water treatment : aeration, sedimentation, softening coagulation, filtration, adsorption, ion exchange, and disinfection. Design of water distribution system.

Module – IV (08 Classes)

Generation and collection of waste water, sanitary, storm and combined sewerage systems, quantities of sanitary waste and storm water, design of sewerage system Primary, secondary and tertiary treatment of wastewater. Waste water disposal standards.

Module –V (10 Classes)

Basic of microbiology. Biological wastewater treatment system : Aerobic processes activated sludge process and its modifications, trickling filter, RBC, Anaerobic Processes conventional anaerobic digester, High rate and hybrid anaerobic reactors, Sludge digestion and handling, Disposal of effluent and sludge, Design problems on water distribution, sewerage, water treatment units, wastewater treatment units and sludge digestion.

Books:

1. Water Supply Engineering-Environmental Engineering v.1 by S.K.Garg, Khanna Publishers
2. Sewage Disposal and Air Pollution Engineering - Environmental Engineering v.2 by S.K.Garg, Khanna Publishers
3. Water Supply and Sanitary Engineering by B.S.BirdiDhanpat Rai Publishing Company
4. Water Supply Engineering by B. C. Punmia and A.K.Jain, Laxmi Publications
5. Water and Wastewater Technology by M.J.Hammer, PHI

Digital Learning Resources:

Course Name	WATER SUPPLY ENGINEERING, Waste water Treatment and Recycling
Course Link	https://nptel.ac.in/courses/105/105/105105201 (https://nptel.ac.in/courses/105/105/105105178/)
Course Instructor	PROF. MANOJ KUMAR TIWARI Department of Civil Engineering IIT Kharagpur