

IF554: Water distribution and waste water collection system design

Teaching and Examination Scheme:

CREDITS = 5 (L=3, T=2, P=0)

M. Tech First year, 1st Semester

Teaching and Assessment Scheme:

Teaching Scheme			Credits	Assessment Scheme				Total Marks
L	T	P		Theory		Practical		
			ESE	CE	ESE	CE		
3	2	0	5	70	30	30	20	150

Course Contents:

Unit No.	Topics	Teaching Hours
1	Water Requirements: Sources of water -Surface &Sub Surface, Drinking water Criteria and Standards, Water demand – Domestic, Industrial, Commercial Forecasting of population, and Design periods of water supply units.	06
2	Intake structure & reservoirs: Intake for various sources – their design, reservoir capacity, pumps- water and waste water pumping & design, water pipe lines types, material and pipe joints, valve.	04
3	Water treatment: Water treatments plant flow diagram, function of each units in brief, Detailed construction and working - of flash mixer, coagulator, sedimentation tank, rapid sand filter, Disinfection of water for Drinking. Water Softening, Ion exchange process.	10
4	Water supply and distributions: Distribution system, configuration, design of distribution system, determination of storage tank capacity,	08
5	Storm water: Estimation of rainfall methods, runoff, planning for storm water collection and disposal.	08
6	Waste water collection: Domestic waste water generation and flow fluctuation, collecting sewers, sewer materials and appurtenances, Laying of sewers.	6

Unit No.	Topics	Teaching Hours
7	Waste water treatment: Waste water treatment plant layout and function of each unit in brief, concept of BOD, COD and sludge. Construction and Working of Screen and grit chamber PST, ASU, TF, SST, Sludge Digester, and Sludge Drying Beds.	8
8	Waste water disposal and reuse: Waste water effluent standards and disposal, Reuse of waste water.	3

List of References:

1. Water Supply and Pollution Control – Clerk, Viessman& Hammer, Harper International Publication
2. Environmental Engineering - Peavy , Rowe ,Tchobanoglous, McGraw Hill Publication
3. Waste Water Engineering – Treatment Disposal & Reuse - Metcalf and Eddy
4. Applied Hydrology - V.T. Chow, D.R. Maidment, L.W. Mays, Tata McGraw Hill Education, New Delhi
5. Manual onWater Supply and Treatment, CPHEEO, Ministry of Urban Development, New Delhi, 1999.
6. Manual on Sewerage and Sewage treatment , CPHEEO, Ministry of Urban Development, New Delhi
7. Water and Waste water Engineering: Design, Principles and Practice, - Mackenzie L. Davis, McGraw Hill Education, New York, 2010
8. Water Supply Engineering - B C Punmia,A K Jain, Laxmi Publications Pvt. Ltd Storm Drainage System –Drainage Manual