GUJARAT TECHNOLOGICAL UNIVERSITY

Minor Degree : Infrastructure Engineering
Semester – V
Subject Code: N115AE01(w.e.f. AY 2025-26)
Subject Name: Urban Water Infrastructure Planning

Type of course: Professional core subject

Prerequisite: Fluid Mechanics and Hydraulics

Rationale: This subject is conceptual practical applications of fluid mechanics and hydraulic

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA(I)	
3	2	0	5	70	0	30	0	100

Content:

Sr. No.	Content	Total Hrs
1	**Introduction-** Need and availability of water, Hydrological concepts, Surface sources of Water and Sub Surface sources of Water	02
2	**Urban water demand:** Various types of urban water demand, variation in demands and their effects, methods to determine the total urban water requirement	08
3	**Urban Water Infrastructure planning and development:** Integrated planning, stages in Urban Water Infrastructure planning.	10
4	**Water Distribution System Planning:** Distribution Reservoirs, layout and methods of distributions, design of distribution networks including pipe network analysis.	10
5	**Storm Water Collection and Distribution System Planning:** Street gutters, in-lets, roadside channel, storm sewers, hydraulics of sewers, sewer system design criteria.	10

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	**25**	**20**	**15**	**10**	**10**

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Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Water Resources System Planning and Management, S.K. Jain and V.P.Singh, Elsevier.
2. Water Supply Engineering, Environmental Engineering Vol. I, S.K. Garg,Khanna Publishers.
3. Design of Water Supply Pipe Networks, P.K.Swamee and A.K.Sharma,Wiley.
4. River Behaviour Management and Training, Vol. I. Central Board of Irrigation and Power, New Delhi
5. SK Garg ,Water Supply Engineering, Environmental Engineering (Vol-I), Khanna Publishers
6. R.K.Bansal (2017), Fluid Mechanics and Hydraulic Machines, Ninth Edition, Laxmi Publications (P) Ltd.
7. Ragunath. H.M., Hydrology, Willey Eastern Limited, New Delhi, 2000.
8. K.Subramanya (2004), Engineering Hydrology, Tata-McGraw Hill, New Delhi.

Course Outcomes:

Sr. No.	CO statement	Marks% weightage
CO-1	Conceptual understanding of available source of water	25
CO-2	Competence in planning and designing for upgradation of water infrastructure system in an urban set up	25
CO-3	Planning and preparation of water supply projects.	25
CO-4	Planning and designing of storm water conveyance network	25

List of Tutorials

1.Water Demand Forecasting example problem

2. Design of water distribution network for a township

3. Design of storm water line network for village