GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Construction Engineering & Management

Course / Subject Code: ME01065051

Course / Subject Name : Water Supply & Drainage

w. e. f. Academic Year:	2024-2025
Semester:	1st Semester
Category of the Course:	PEC

Prerequisite:	Knowledge of water supply engineering, component of intake. Flow measurement devices pipe network design, storm water discharge calculation.
Rationale:	It is essential to have knowledge of planning of water supply scheme for practicing civil Engineer. Student will be given exposure of various software for design of pipe network, principles for hydraulic design of storm water sewerwith calculation of flood discharge.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Analyze and Plan a water supply scheme	R, A ,N
02	Design Intake and Pressure conduit	U,N,C
03	Apply scada and Epanet in water supply systems	A,N
04	Predict and forecast floods	N,E
05	Design storm water drainage system	U,N,C

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Sources Of Water ,Water Supply Systems Planning of water supply scheme, feasibility study, Study on Project area and need for the project, Long term plan of water supply scheme , institutional and Functional Aspect . Sustainable water supply	9	15
2.	Intake, Wet and Dry Intake, radial collector well, Design of Intake .Transmission of Water , Free flow and pressure conduit storage sump and service reservoirs, pumps and its selection	11	25
3.	Measurement of flow and SCADA, Different types of pipe materials, Appurtenances, Losses in pipes, Analysis of pipe network using EPANET	13	30
4.	Prediction of flood for urban storm drainage, Rational method, hydraulics of flow in open channel, hydraulic design of storm sewer, Storm water detention and selection of detention pond	12	30
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	**20**	**20**	**20**	**10**	**20**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:

1. Applied Hydrology, Chow, V.T, Maidment, D.R. and Mays, L.W., McGraw Hill
2. Computer Assisted Floodplain Hydrology and Hydraulics: Hogan, D.H, Mc-Graw-hill New york
3. Hydro system Engineering and Management, Mays, L.W. and Tung, Y.K., McGraw Hill, New York
4. Manual of Water Supply and Treatment, CPHEEO, Ministry of Urban Development, New Delhi

(b) Open source software and website:
http://en.wikipedia.org/wiki/Water_supply_network
http://en.wikipedia.org/wiki/Stormwater

Suggested Course Practical List: If any

1. Feasibility study of water supply and water treatment plant
2. Population forecasting method and estimation of water demand
3. Study of SCADA, EPANET based pipe network
4. Urban storm water drainage parameters and design methods
5. Design of Pumps
6. Case study of water supply scheme

List of Laboratory/Learning Resources Required:

Model of intake, Software EPANET and SCADA
Design and analysis of pipe network
Urban storm water modeling
Hydraulic design of storm water sewer

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