

# GUJARAT TECHNOLOGICAL UNIVERSITY

## CIVIL (WATER RESOURCES ENGINEERING) (33)

### WATER SUPPLY AND DRAINAGE

**SUBJECT CODE:** 2711207

**SEMESTER:** I

**Type of course:** Water supply engineering

**Prerequisite:** Knowledge of water supply engineering, component of intake. Flow measurement devices, pipe network design, storm water discharge calculation

**Rationale:** Student will be able to understand planning of water supply scheme, exposure of various software for design of pipe network, principles for hydraulic design of storm water sewer with calculation of flood discharge.

#### Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2	2	5	70	30	20	10	20	0	150

#### Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Planning of water supply scheme, feasibility study	6	15
2	Intake, radial collector well, storage sump and service reservoirs, pumps and its selection	12	25
3	Measurement of flow and SCADA, Different types of pipe materials, Appurtenances, Losses in pipes, Analysis of pipe network using EPANET	12	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

#### Reference Books:

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

#### Course Outcome:

After learning the course the students should be able to: Understand demand of water, design of intakes and ESR, analysis of pipe network, understand urban storm discharge and hydraulic design of storm sewer.

**List of Experiments:**

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

**Open Ended Projects:**

1. Design and analysis of pipe network
2. Urban storm water modeling
3. Hydraulic design of storm water sewer

**Major Equipments:** Model of intake, Software EPANET and SCADA

**List of Open Source Software/learning website**

[http://en.wikipedia.org/wiki/Water\\_supply\\_network](http://en.wikipedia.org/wiki/Water_supply_network)

<http://en.wikipedia.org/wiki/Stormwater>