

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VI
ENVIRONMENTAL SCIENCE AND ENGINEERING

Subject Name: Municipal Engineering

Subject Code:161301

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	4	0	7	70	0	30	50

Sr No	Course Contents
1	Water supply scheme: Importance & necessity of water supply scheme, Importance and reliability of water works, essentials of water supply engineering.
2	Sources of water: Surface water sources and ground water sources.
3	Quantity of water: Type of demand. Per capita demand, design period, fluctuation in demand of water, factors affecting demand of water.
4	Pumps and Pumping stations: Need of pumping, classification of pumps, different type of pumps used in water supply, power of pumping, total lift of pump, H.P of pump, location of pumping station, site selection.
5	Collection and conveyance: Intakes, type of intake, conveyance of water, different type of pipes used in water supply, pipe-joint, laying of pipe, hydrostatic test.
6	Distribution system: Type of distribution system, different layout of distribution system, methods of supplying water, pressures in distribution system, distribution resources and its capacity, type of reservoirs & accessories, design of distribution system, design of pipelines and analysis of complex pipe networks-Hard cross method.
7	Valves and Fittings: Different type of valves, hydrants, meters, stop cock & water tap, pipe fittings, leakage & waste of water factors, affecting losses & wastes.
8	Sanitary works: Definitions, sanitary works, objectives of sewage disposal
9	Systems of sanitation: Methods of collection, conservancy systems, collection system, water carriage system, sewage system.
10	Quantity of sanitary and storm sewage: Sources of sanitary sewage, factors affecting and determination of quantity of sanitary sewage, factor affecting storm sewage and determination of quantity of storm water.
11	Design of sewers:

	Design period, per capita sewage flow, ground water infiltration, estimation of storm runoff, flow assumption, determination of velocity of flow.
12	Drains and sewers: Drains, sewers: sections, sewer material, sewer drawings, corrosion prevention in sewers.
13	Sewers appurtenances: Manhole, street inlet, flushing tanks, catch basins, inverted siphon, ventilation of sewers.
14	Construction and maintenance of sewers: Laying of sewers, jointing of sewers, hydraulic testing of pipe sewers, maintenance of sewers, sewer cleaning equipments and devices.
15	House plumbing: Terms, Plumbing tools, traps and system of plumbing.

Tutorials:

1. Water supply scheme
2. Quantity of water
3. Pump and pumping station
4. Collection and conveyance of water:
 - a) Intake works
 - b) Pipes
 - c) Pipe joints
5. Distribution system
6. Design of distribution system-examples
7. Valves and fittings
8. Sanitary works and system of sanitation
9. Quantity of sanitary and storm water
10. Design of sewers-examples
11. Sewer appurtenances
12. Construction and maintenance of sewers
13. House plumbing

Reference Books:

1. Water supply and sewage system – G. Birdie
2. Water supply and sewage system - Steel and McGhee
3. Water Supply & Sewage Systems - K.N. Duggal
4. Water Supply & Sewage Systems – S. K. Garg