GUJARAT TECHNOLOGICAL UNIVERSITY

Environmental Engineering

B. E. SEMESTER: VI

Subject Code:161301

Subject Name: **Municipal Engineering**

Sr.No.	Course Contents	Total Hrs
1.	**Water supply scheme:** Importance & necessity of water supply scheme, Importance and reliability of water works, essentials of water supply engineering.	1
2.	**Sources of water:** Surface water sources and ground water sources.	6
3.	**Quantity of water:** Type of demand. Per capita demand, design period, fluctuation in demand of water, factors affecting demand of water.	2
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.	2
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
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.	4
7.	**Valves and Fittings:** Different type of valves, hydrants, meters, stop cock & water tap, pipe fittings, leakage & waste of water factors, affecting losses & wastes.	3
8.	**Sanitary works:** Definitions, sanitary works, objectives of sewage disposal	2

9.	**Systems of sanitation:** Methods of collection, conservancy systems, collection system, water carriage system, sewage system.	2
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.	4
11.	**Design of sewers:** Design period, per capita sewage flow, ground water infiltration, estimation of storm runoff, flow assumption, determination of velocity of flow.	6
12.	**Drains and sewers**: Drains, sewers: sections, sewer material, sewer drawings, corrosion prevention in sewers.	2
13.	**Sewers appurtenances:** Manhole, street inlet, flushing tanks, catch basins, inverted siphon, ventilation of sewers.	4
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.	2
15.	**House plumbing:** Terms, Plumbing tools, traps and system of plumbing.	2

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