II Year-II Semester (20CE4756) Water Supply Engineering

Int. Marks	Ext. Marks	Total Marks	L	Т	Р	С
30	70	100	3	-	-	3

Pre- Requisites: Fundamentals of Environmental studies and chemistry

Course Objectives:

The course will address the following:

- Outline planning and the design of water supply systems for a community/town/city
- Provide knowledge of water quality requirement for domestic usage
- Impart understanding of importance of protection of water source quality and enlightens the efforts involved in converting raw water into clean potable water.
- Selection of valves and fixture in water distribution systems
- Impart knowledge eon design of water distribution network

UNIT-I:

Water Demand and Quantity Estimation :Estimation of water demand for a town or city, Per capital Demand and factors influencing it- Types of water demands and its variations- factors affecting water demand, Design Period, Factors affecting the Design period, Population Forecasting.

UNIT-II:

Sources of Water: Lakes, Rivers, Impounding Reservoirs, comparison of sources with reference to quality, quantity and other considerations. Ground water sources of water: Types of water bearing formations, springs, Wells and Infiltration galleries, .

Collection and Conveyance of Water: Factors governing the selection of the intake structure, Types of Intakes. Conveyance of Water: Gravity and Pressure conduits, Design aspects of pipelines, laying of pipelines

UNIT-III:

Quality and Analysis of Water: Characteristics of water–Physical, Chemical and Biological-Analysis of Water – Physical, Chemical and Biological characteristics. -I.S .Drinking water quality standards and WHO guidelines for drinking water

UNIT-IV:

Treatment of Water: Flowchart of water treatment plant, Treatment methods: Theory and Design of Sedimentation, Coagulation, Sedimentation with Coagulation, Filtration. Theory of disinfection-Chlorination and other Disinfection methods

UNIT-V:

Distribution of Water: Requirements-Methods of Distribution system, Layouts of Distribution networks, Pressures in the distribution layouts, Analysis of Distribution networks: Hardy Cross and equivalent pipe methods-Components of Distribution system: valves such as sluice valves, air valves, scour valves and check valves, hydrants, and water meters.

Course Outcomes:

S.No	Course Outcomes	
1	Plan the water and distribution systems	
2	Identify the water source and select proper in take structure	L2
3	exam the quality of water	L4
4	Select suitable treatment for raw water purification	L5
5	Select the appropriate appurtenances in the water supply	L5

Text Books:

- 1. Environmental Engineering Howard S. Peavy, DonaldR. Rowe, Teorg George Tchobanoglus Mc-Graw-Hill Book Company, New Delhi, 1985.
- 2. Elements of Environmental Engineering–K.N.Duggal, S.Chand&CompanyLtd., New Delhi, 2012.

Reference Books:

- 1. Water Supply Engineering– P. N. Modi.
- 2. Water Supply Engineering–B. C. Punmia
- 3. Water Supply and Sanitary Engineering–G. S.Birdie and J. S. Birdie
- 4. Environmental Engineering, D. Srinivasan, PHI Learning Private Limited, New Delhi.201