



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF CIVIL ENGINEERING

II Year – II Semester		L	T	P	C
		3	0	0	3
ENVIRONMENTAL ENGINEERING- I					

Course Learning 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 quantity requirements and methods of piping
- Impart understanding of importance of protection of water source quality and methods of treatment of converting raw water into product water of required quality
- Design of water treatment plant for a village/city
- Impart knowledge on design of water distribution network

Course Outcomes:

Upon the successful completion of this course, the students will be able to:

- Estimation of design population and water demand
- Identify the water source and select proper intake structure
- Characterization of water for drinking, industry and construction
- Design of water treatment plant for a village/city
- Selection and design of an ideal distribution system

UNIT-I Introduction: Importance and Necessity of Protected Water Supply systems, Water borne diseases, Flow chart of public water supply system, Role of Environmental Engineer. Evolution of water supply system.

Water Demand and Quantity Estimation: Estimation of water demand for a town or city, Per capita 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- Capacity of storage reservoirs, Mass curve analysis. Groundwater sources of water: Types of water bearing formations, springs, Wells and Infiltration galleries, Yields from 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, Types of Pipes, Pipe Materials, Pipe joints, Design aspects of pipe lines, 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. Comparison of sources with reference to quality- IS 10500 2012 and WHO guidelines for drinking water - Water quality standards for Agriculture, Industries and Construction

