B. Tech. Civil Engineering				
Course code: Course Title	**Course Structure**			**Pre-Requisite**
CE318: Environmental Aspects of Water Resources	L	T	P	Nil
	3	1	0	

S. No	Course Outcomes (CO)
CO1	Learn key concepts, principles, and definitions related to water quality parameters, wastewater management, the ecological flow of rivers, and water conservation.
CO2	Analyse the impact of wastewater flows having organic and inorganic pollutants, heavy metals, and pathogenic microorganisms, on water quality and aquatic ecosystems.
CO3	Prepare an impact assessment of wastewater disposal on river water quality using models like the Streeter-Phelps equation and oxygen sag curve.
CO4	Assess the environmental and socio-economic impacts of large-scale water infrastructure projects, such as dams and irrigation systems.

S. No	Content	Contact hours
UNIT 1	Overview of Water Quality Parameters, dissolved oxygen as an indicator of stream water quality, and water quality based on designated best use. Major Organic and inorganic pollutants, heavy metals, and pathogenic microorganisms. Effects on aquatic ecosystems, oxygen depletion, and implications for human health.	9
UNIT 2	Sources of water pollution include industrial waste discharge, CETP effluent discharge, agricultural runoff, sewage, and wastewater disposal. Disposal of treated wastewater into natural streams, lakes, and estuaries, self-purification of natural streams, impact of wastewater discharge on river water quality, Streeter-Phelps equation, and its application in river water quality management.	9
UNIT 3	Environmental impact assessment of water projects: Environmental impacts of dams and irrigation projects, ecological impacts on aquatic life and wetlands, socio-economic impacts on local communities. Requirements of maintaining ecological flow in rivers. Environmental management plans and regulatory frameworks for water resource development projects ensure sustainable and responsible water management practices.	7

UNIT 4	Water conservation techniques, Rainwater harvesting, Groundwater recharge, Integrated water resource management. Water pricing, economic aspects of environmental and water resource management.	7
UNIT 5	Case study on the Environmental Impact Assessment (EIA) of water reservoir projects. Case study on the environmental and economic aspects of canal projects.	10
TOTAL		**42**

REFERENCES :

S. No.	**Name of Books/ Authors**	**Year of Publication**
1	Water Resources: Environmental Planning, Management, and Development, Asit K. Biswas.	1997
2	Environmental Hydrology– Andy D. Ward & Stanley W. Trimble.	2016