

Jaipur Engineering College and Research Centre, Jaipur

Department of Civil Engineering

Lecture Plan						
Subject name: Environmental Engineering Subject Code:6CE4-03 Year:3rd Semester: 6th		Pos PO1; PO2; PO3;PO4;PO6;PO7; PO12		COs 1. To understand the necessity of water quality and distribution system with different methods and to improve its quality with designing of treatment method. 2. To understand the problems associated with collection, transportation, treatment of wastewater and required effluent sewage quality to dispose into somewhere. 3. To understand composition air and air pollutants with air quality standards maintained for proper monitoring of them. 4. To understand basic principal of noise pollution, measurement with various control methods.		
S. No.	Lecture No.	Topic to be discussed	COs	Objective of Unit	Outcome of Lecture and CO	From page to
					Students are able to:-	
1	1	Objective ,Scope and outcome of course	CO1	Scope of subject	Understand importance and scope of course	
2	2	Sources of water and quality issues	CO1	Water quality parameters and operation and maintenance of water treatment	Understand about necessity of water and issues in quality of water	T1(pg.6619 3)

	3	Water quality for Various beneficial uses	CO1		Understand about basic water quality parameter to analyze quality of water	T1(368-372)
	4	Water quality standards and water quality indices	CO1		Understand about quality of water for safe uses.	T1(353-367)
	5	Water supply system and demand of water for different fields	CO1		Calculate the quantity of water required for various purposes.	T1(7-48)
	6	Components of water supply system	CO1		Understand about basic components of water supply system	T1(289-319)
	7	Transmission of water and Distribution systems	CO1		Understand about layout of water distribution systems.	T1(579-589)
	8	Various valve used in water system	CO1		Understand about valves used in supply of water.	T3(574-575)
	9	Service reservoirs and design	CO1		Able to design and calculate quantity of water required for service reservoirs	T3(53-57)
	10	Water treatment- aeration and sedimentation,	CO1		Understand to remove impurity like odour, taste and inorganic suspended solids.	T3(220-266)
	11	coagulation, flocculation and Filtration	CO1		Understand methods for removal of colloidal impurity.	T3(267-360)
	12	Disinfection	CO1		Able to remove	T3(363-393)

					diseases causing bacteria from water by various disinfection methods.	
	13	Advance treatments like adsorption and ion exchange	CO1		Understand to remove hardness and various salts present in raw and useable water.	T3(407-414)
	14	Membrane Processes	CO1		Understand about membrane process for higher treatment.	T1(545)
3	15	Sewage- Domestic and storm water, quality and Sewage flow variations	CO2	Wastewater quality parameters and operation and maintenance of sewage treatment plant	Understand about sewage system and calculate sewage quantity generated from domestic and storm water	T2(1-10)
	16	Sewers, shape design, operation and maintenance	CO2		Design sewers and understand operational issues of sewers	T2(85-102)
	17	Sewage pumping, Sewerage and Sewer appurtenances	CO2		Understand about sewage pumping	T4(461-499)
	18	Design of Sewerage system, Small bore system	CO2		Able to design sewerage system.	T2(2-10)
	19	Storm water quantification and design of storm water	CO2		Calculate quantity of storm water by rational formulas	T2(12-14)
	20	Sewage quality parameters and BOD and COD	CO2		Able to determine sewage quality	T1(330-340)

					by calculating sewage quality parameters	
21	TOC, solids, and DO	CO2			Calculate and determine the sewage quality parameters	T4(524-560)
22	Nitrogen, phosphorus and Standard of disposal of waste water	CO2			Able to understand disposal standards adopted by GOI for disposal of sewage after treatment in different location	T4(524-560)
23	Standard of disposal and Indian standards	CO2			Indian standards for sewage disposal.	T4(562-593)
24	Sewage and Sullage	CO2			Understand difference between sewage and sullage	T4(565)
25	Pollution due to improper disposal of sewage	CO2			Problems arise from improper disposal of sewage.	T4(562-593)
26	Waste water treatment-aerobic	CO2			Understand aerobic treatment of waste water	T4(639-645)
27	Waste water treatment-anaerobic	CO2			Understand anaerobic treatment of waste water	T2(390-416)
28	Suspended growth system	CO2			Understand suspended growth system of treatments	T2(346-377)
29	Attached growth system	CO2			Understand attached growth system of treatments	T2(278-313)
30	Recycling of Sewage-quality requirements for various purposes	CO2			Able to understand the recycling of	T2(457-498)

					sewage and uses in various area like irrigation and farming	
	31	Wastewater Disposal and refuse	CO2		Understand methods of disposal	
	32	Disposal of sewage by dilution	CO2		Understand disposal of sewage dilution method	T2(188-198)
	33	Self purification of streams	CO2		Understand the self purification property of streams	T2(193-195)
	34	Sewage disposal by irrigation sewage farming	CO2		Understand disposal of sewage by sewage farming and irrigation	T2(219-228)
	35	Waste water reuse	CO2		Understand the waste water reuse.	T2(219-228)
	36	Air composition, properties and Quantification of air	CO3	Understand about air quality of surrounding and control of pollutants	Understand air composition and quantification of air.	T2(631-659)
	37	Monitoring of air pollutants and Control measure for air pollution	CO3,C O4		Understand the monitoring of air pollutants	T2(672-690)
	38	Air quality standards, Basic concept of noise, Measurements	CO3,C O4	Understand harmful effects of noise pollution and control measures of noise pollution	Understand about air quality standards and basic knowledge of noise and its measurements.	T2(713-730)
	39	Various Control Methods of Noise pollution	CO4		Understand to control methods of noise pollution.	T2(713-730)

	40	Problems	CO1- CO4		Problems related to designing and others	
Reference books:		T1-Water Supply Engineering by Santosh Kumar Garg vol.1 T2- Sewage Disposal and Air pollution Engineering by Santosh Kumar Garg vol.2 T3- Water supply engineering by Dr. BC Punmia T4-Water Supply and Sanitary engineering by RANGWALA				