

LESSON PLAN

Discipline: Civil Engineering.	Semester: Fifth (5 th)	Name of the Faculty: Er. Rajashree Rout
Subject: Water Supply and Waste Water Engineering	No. of days per week class allotted: Four (5)	Semester from Date: 15.09.22 to Date: 22.12.22 No. of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	Necessity of treated water supply Per capita demand
	2 nd	variation in demand and factors affecting demand
	3 rd	Methods of forecasting population,
	4 th	Numerical problems using different methods
	5 th	Impurities in water – organic and inorganic,
2 nd	1 st	Harmful effects of impurities
	2 nd	Analysis of water physical, chemical and bacteriological
	3 rd	Water quality standards for different uses
	4 th	Review Class
	5 th	Surface sources – Lake, stream, river and impounded reservoir
3 rd	1 st	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	2 nd	Yield from well- methods of determination, Numerical problems using yield formulae (deduction excluded)
	3 rd	Intakes – types, description of river intake, reservoir intake, canal intake
	4 th	Pumps for conveyance & distribution – types, selection, installation.
	5 th	Pipe materials – necessity, suitability, merits & demerits of each type
4 th	1 st	Pipe joints – necessity, types of joints, suitability,
	2 nd	methods of jointing Laying of pipes – method

	3 rd	Review Class
	4 th	Monthly test
	5 th	Flow diagram of conventional water treatment system
5 th	1 st	Treatment process / units : Aeration ; Necessity
	2 nd	Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	3 rd	Sedimentation with coagulation: Necessity, principles of coagulation,
	4 th	types of coagulants, Flash Mixer, Flocculator , Clarifier (Definition and concept only)
	5 th	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
6 th	1 st	Disinfection : Necessity, methods of disinfection
	2 nd	pre-chlorination, break point chlorination, super-chlorination
	3 rd	Chlorination – free and combined chlorine demand, available chlorine, residual chlorine,
	4 th	Softening of water – Necessity, Methods of softening
	5 th	Lime Soda process & ion exchange method (Concept only)
7 th	1 st	Review Class
	2 nd	General requirements, types of distribution system-gravity, direct and combined
	3 rd	Methods of supply – intermittent and continuous
	4 th	Distribution system layout types, comparison, suitability
	5 th	Valves-types features, uses, purpose-slucice valves, check valves
8 th	1 st	air valves, scour valves
	2 nd	Fire hydrants, Water meters Review Class
	3 rd	Method of connection from water mains to building supply

	4 th	Monthly test
	5 th	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
9 th	1 st	Review Class
	2 nd	Aims and objectives of sanitary engineering
	3 rd	Definition of terms related to sanitary engineering
	4 th	Systems of collection of wastes– Conservancy and Water Carriage System
	5 th	– features ,comparison, suitability Review Class
10 th	1 st	Quantity of sanitary sewage – domestic & industrial sewage, of sanitary sewage
	2 nd	Computation of size of sewer application of Chazy's formula
	3 rd	Limiting velocities of flow : self-cleaning and scouring
	4 th	General importance, strength of sewage
	5 th	Characteristics of sewage-physical, chemical & biological
11 th	1 st	Concept of sewage-sampling, tests for – solids, pH
	2 nd	dissolved oxygen, BOD, COD Review Class
	3 rd	Types of system-separate, combined, partially separate ,
	4 th	features, comparison between the types, suitability
	5 th	Shapes of sewer
12 th	1 st	Monthly test
	2 nd	rectangular, circular, avoid-features, suitability
	3 rd	Laying of sewer-setting out sewer alignment Review Class
	4 th	Manholes and Lamp holes – types, features, location, function
	5 th	Inlets, Grease & oil trap – features, location, function

13 th	1 st	Storm regulator, inverted siphon – features, location, function
	2 nd	Disposal on land – sewage farming, sewage application and dosing,
	3 rd	sewage sickness-causes and remedies
	4 th	Disposal by dilution – standards for disposal in different types of water bodies
	5 th	self-purification of stream Review Class
14 th	1 st	Principles of treatment
	2 nd	flow diagram of conventional treatment
	3 rd	Primary treatment- necessity, principles
	4 th	essential features, functions
	5 th	Secondary treatment necessity, principles,
15 th	1 st	Monthly Test.
	2 nd	essential features, functions
	3 rd	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	4 th	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	5 th	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe

