

LESSON PLAN

DISCIPLINE	SEMESTER 5 TH Sem.	Name of the Teaching Faculty: Smt.Rajashree Nayak
Sub: WS&WWE Th.4	No. of Days Per Week: 5 Class Allotted	Semester From Date: 14/07/2025 To Date: 15/11/2025 No. of Weeks: 15 Weeks
Week	Class Day	Theory/Practical Topic
1st	1	Necessity of treated water supply
	2	Per capita demand, variation in demand and factors affecting demand
	3	Methods of forecasting population, Numerical problems using different methods
	4	Impurities in water – organic and inorganic, Harmful effects of impurities
	5	Analysis of water –physical, chemical and bacteriological
2nd	1	Water quality standards for different uses
	2	Surface sources – Lake, stream, river and impounded reservoir
	3	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	4	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	5	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
3rd	1	Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
	2	Intakes – types, description of river intake, reservoir intake, canal intake
	3	Pumps for conveyance & distribution – types, selection, installation.
	4	Pipe materials – necessity, suitability, merits & demerits of each type
	5	Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method
4th	1	Flow diagram of conventional water treatment system
	2	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	3	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	4	Treatment process / units : Aeration ; Necessity Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	5	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)
5th	1	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)
	2	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	3	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	4	Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
	5	Disinfection : Necessity, methods of disinfection Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
6th	1	Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)

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	2	General requirements, types of distribution system-gravity, direct and combined
	3	Methods of supply – intermittent and continuous
	4	Distribution system layout – types, comparison, suitability
	5	Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
7th	1	Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
	2	Method of connection from water mains to building supply
	3	General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
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	5	Aims and objectives of sanitary engineering
8th	1	Definition of terms related to sanitary engineering
	2	Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability
	3	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
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9th	1	Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage.
	2	Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	3	Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	4	General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
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10th	1	Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
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	4	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	5	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
11th	1	Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	2	Shapes of sewer – rectangular, circular, avoid-features, suitability
	3	Laying of sewer-setting out sewer alignment
	4	Manholes and Lamp holes – types, features, location, function
	5	Inlets, Grease & oil trap – features, location, function
12th	1	Storm regulator, inverted siphon – features, location, function
	2	Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	3	Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	4	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	5	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
13th	1	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	2	Principles of treatment, flow diagram of conventional treatment
	3	Primary treatment – necessity, principles, essential features, functions

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	4	Secondary treatment – necessity, principles, essential features, functions
	5	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
14th	1	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	2	Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	3	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
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	5	Plumbing arrangement of single storied & multi storied building as per I.S. code practice
15th	1	Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
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