



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT : Th-4 (WATER SUPPLY AND WASTE WATER ENGINEERING)

Name Of The Faculty :- Er. Diptimayee Mohanty

Branch :- Civil Engineering

Session :- 2025-26

Semester :- 5th

Examination :- 2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
	PART :A (WATER SUPPLY)		
1	Introduction to Water Supply, Quantity and Quality of water	10	10
2	Sources and Conveyance of water	8	8
3	Treatment of water	12	12
4	Distribution system and Appurtenance in distribution	8	8
5	W/s plumbing in building	2	2
	PART :B (WASTE WATER ENGINEERING)		
6	Introduction	5	5
7	Quantity and Quality of sewage	7	7
8	Sewerage system	5	5
9	Sewer appurtenances and Sewage Disposal	7	7
10	Sewage treatment	8	8
11	Sanitary plumbing for building	3	3
	Total Period:	75	75

Dr. Mohanty
10.07.25

Sign of Faculty

KSP
10.7.2025

Sign of H.O.D.

Name of the programme: Diploma in Civil ENGINEERING	Semester: 5TH	Name of the Teaching Faculty: Er. Diptimayee Mohanty	
		Academic Year : 2025-26	Examination : 2025 (W)
Course Code: TH-4	Course Year: Third Year	No. of Classes Alloted Per Week :	5
		Planned Classes Required to Complete the Course	75
Week	Class Day	Topics to be Covered	
1st	1st	Introduction to Water Supply, Quantity and Quality of water: 1.1 Necessity of treated water supply	
	2nd	1.2 Per capita demand, variation in demand and factors affecting demand	
	3rd	1.3 Methods of forecasting population, Numerical problems using different methods	
	4th	1.3 Methods of forecasting population, Numerical problems using different methods	
	5th	1.4 Impurities in water – organic and inorganic, Harmful effects of impurities	
2nd	1st	1.4 Impurities in water – organic and inorganic, Harmful effects of impurities	
	2nd	1.5 Analysis of water –physical, chemical and bacteriological	
	3rd	1.5 Analysis of water –physical, chemical and bacteriological	
	4th	1.6 Water quality standards for different uses	
	5th	Revision of chapter-1	
3rd	1st	Sources and Conveyance of water: 2.1 Surface sources – Lake, stream, river and impounded reservoir	
	2nd	2.2 Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well	
	3rd	2.3 Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)	
	4th	2.4 Intakes – types, description of river intake, reservoir intake, canal intake	
	5th	2.5 Pumps for conveyance & distribution – types, selection, installation.	
4th	1st	2.6 Pipe materials – necessity, suitability, merits & demerits of each type	
	2nd	2.7 Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method	
	3rd	Revision of Chapter-2	

4 th	4 th	Treatment of water: 1. Design of treatment units excluded. 2. Students may be asked to prepare detailed sketches of units, preferably from working drawing, as home assignment 3. Field visit to treatment plant, under practical should be arranged after covering this unit. 3.1 Flow diagram of conventional water treatment system
	5 th	3. Field visit to treatment plant, under practical should be arranged after covering this unit. 3.1 Flow diagram of conventional water treatment system
5 th	1 st	3. Field visit to treatment plant, under practical should be arranged after covering this unit. 3.1 Flow diagram of conventional water treatment system
	2 nd	3.2 Treatment process / units : 3.2.1 Aeration ; Necessity
	3 rd	3.2 Treatment process / units : 3.2.1 Aeration ; Necessity
	4 th	3.2.2 Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	5 th	3.2.2 Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
6 th	1 st	3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulation ,Flash mixer,Flocculator,Clarifier (Defination and concept only)
	2 nd	3.2.4 Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	3 rd	3.2.4 Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	4 th	3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)
	5 th	3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)
7 th	1 st	Distribution system And Appurtenance in distribution system: 4.1 General requirements, types of distribution system-gravity, direct and combined
	2 nd	4.1 General requirements, types of distribution system-gravity, direct and combined
	3 rd	4.2 Methods of supply – intermittent and continuous
	4 th	4.2 Methods of supply – intermittent and continuous
	5 th	4.3 Distribution system layout – types, comparison, suitability

8 th	1 st	4.3 Distribution system layout – types, comparison, suitability
	2 nd	4.4 Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
	3 rd	Revision of Chapter-4
	4 th	W/s plumbing in building : 5.1 Method of connection from water mains to building supply
	5 th	5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
9 th	1 st	Introduction 6.1 Aims and objectives of sanitary engineering
	2 nd	6.1 Aims and objectives of sanitary engineering
	3 rd	6.2 Definition of terms related to sanitary engineering
	4 th	6.3 Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability
	5 th	6.3 Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability
10 th	1 st	Quantity and Quality of sewage 7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage
	2 nd	7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on computation quantity of sanitary sewage
	3 rd	7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	4 th	7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	5 th	7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
11 th	1 st	7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
	2 nd	Revision of Chapter-7
	3 rd	Sewerage system: 8.1 Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	4 th	8.1 Types of system-separate, combined, partially separate , features, comparison between the types, suitability
	5 th	8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability

12 th	1 st	8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability
	2 nd	8.3 Laying of sewer-setting out sewer alignment
	3 rd	Sewer appurtenances and Sewage Disposal: 9.1 Manholes and Lamp holes – types, features, location, function
	4 th	9.2 Inlets, Grease & oil trap – features, location, function
	5 th	9.2 Inlets, Grease & oil trap – features, location, function
13 th	1 st	9.3 Storm regulator, inverted siphon – features, location, function
	2 nd	9.3 Storm regulator, inverted siphon – features, location, function
	3 rd	9.4 Disposal on land – sewage farming, sewage application and dosing, sewage sickness-causes and remedies
	4 th	9.5 Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
	5 th	Sewage treatment : (Note: 1.Design of treatment units excluded. 2. Students may be asked to prepare detailed sketches of units, preferably from working drawing, as home assignment. 3. Field visit to treatment plant, under practical should be arranged after covering this unit.) 10.1 Principles of treatment, flow diagram of conventional treatment
14 th	1 st	10.1 Principles of treatment, flow diagram of conventional treatment
	2 nd	10.1 Principles of treatment, flow diagram of conventional treatment
	3 rd	10.2 Primary treatment – necessity, principles, essential features, functions
	4 th	10.2 Primary treatment – necessity, principles, essential features, functions
	5 th	10.3 Secondary treatment – necessity, principles, essential features, functions
15 th	1 st	10.3 Secondary treatment – necessity, principles, essential features, functions
	2 nd	Revision of Chapter-10
	3 rd	Sanitary plumbing for building : 11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	4 th	11.2 Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	5 th	11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe

Signature of Faculty
10.07.25

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Signature of H.O.D.
10.7.2025

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