

**BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK**  
**DEPARTMENT OF CIVIL ENGINEERING**



**LESSON PLAN**

SUBJECT: WATER SUPPLY AND WASTE WATER ENGG (TH 4)

FACULTY: SINDHUJA PRIYADARSHINI

ACCADEMIC SESSION: 2023-24

SEMESTER: 5<sup>TH</sup>

SEC: C

Sd/-

H O D (Civil Engg.)

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<b>Discipline:</b> Civil Engineering	<b>Semester:</b> 5TH(A)		<b>Name of teaching faculty:</b> SINDHUJA PRIYADARSHINI
<b>Subject:</b> WATER SUPPLY AND WASTE WATER ENGG.	<b>No.of days/ per week class allotted : 05 period per week</b> (Mon-01;Tue-02;Wed-01;Fri- 01)		<b>Semester from date : 01/07/24</b> <b>To date : 08/11/24</b> <b>No of week : 14</b>
<b>Week</b>	<b>Class day</b>	<b>No of period available</b>	<b>Theory topics</b>
1ST	01/07/2024	1	<b>Introduction to Water Supply, Quantity and Quality of water</b> 1.1 Necessity of treated water supply 1.2 Per capita demand, variation in demand
	02/07/2024	2	factors affecting demand
	03/07/2024	1	
	05/07/2024	1	1.3Methods of forecasting population, Numerical problems using different methods
2ND	09/07/2024	2	Numerical problems using different method
	10/07/2024	1	1.4Impurities in water–organic and inorganic,Harmful effects of impurities
	12/07/2024	1	1.5Analysis of water–physical,chemical and bacteriological 1.6Waterquality standards for different uses
3RD	15/07/2024	1	<b>Sources and Conveyance of water</b> <b>2.1Surface sources–Lake,stream,riverandimpoundedreservoir</b>
	16/07/2024	2	2.2Underground sources–aquifer type & occurrence–Infiltration gallery, infiltration well,springs, 2.3Yield from well-methods of determination,Numerical problems using yield formulae

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	19/07/2024	1	2.4Intakes–types,description of river intake,reservoir intake,canal intake 2.5Pumps for conveyance & distribution–types,selection,installation
4TH	22/07/2024	1	2.6Pipe materials–necessity,suitability,merits& Demerits of eachtype
	23/07/2024	2	2.7Pipejoints–necessity,typesofjoints,suitability,methods of jointing,Laying of pipes–method
	24/07/2024	1	<b>3.Treatmentofwater</b> 3.1Flowdiagram of conventional water treatment system 3.2Treatment process/units:3.2.1Aeration;Necessity
	26/07/2024	1	3.2.2Plain Sedimentation:Necessity Working principles,Sedimentation tanks–types,essential features,operation & maintenance 3.2.3Sedimentati on with coagulation:Necessity,principles of coagulation
5TH	29/07/2024	1	Types of coagulants,FlashMixer,Flocculator,Clarifier(Definition and concept only) 3.2.4Filtration:Necessity,principles
	30/07/2024	2	Types of filter,SlowSand Filter,RapidSand Filter and Pressure Filter–essential features
	31/07/2024	1	3.2.5Disinfection:Necessity,methods of disinfection Chlorination–free and combined chlorine demand
	02/07/2024	1	Available chlorine,residual chlorine,pre-chlorination,breakpoint chlorination,super-chlorination 3.2.6.Softening of water–Necessity,Methods of softening
6TH	05/08/2024	1	Limesoda process and Ionexchange method
	06/08/2024	2	<b>4.Distribution system And Appurtenance in distribution system:</b> 4.1General requirements,types of distribution system-gravity,direct and

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			combined
	07/08/2024	1	<b>CLASSTEST-I</b>
	09/08/2024	1	4.2 Methods of supply–intermittent and continuous
7TH	12/08/2024	1	4.3 Distribution system layout–types, comparison, suitability
	13/08/2024	2	4.4 Valves–types, features, uses, purpose–sluice valves, check valves, air valves
	14/08/2024	1	, scour valves, Firehydrants, Water meters
	16/08/2024	1	<b>SECTION B: WASTE WATER ENGINEERING</b> <b>6 Introduction</b> 6.1 Aims and objectives of sanitary engineering 6.2 Definition of terms related to sanitary engineering
8TH	20/08/2024	2	6.3 Systems of collection of wastes–Conservancy and Water Carriage System–features, comparison, suitability
	21/08/2024	1	<b>7. Quantity and Quality of sewage</b> 7.1 Quantity of sanitary sewage–domestic & industrial sewage, variation in sewage flow, Numerical problem on computation quantity of sanitary sewage
	23/08/2024	1	7.2 Computation of size of sewer, application of Chazy’s formula,
9TH	27/08/2024	2	Limiting velocities of flow : self-cleaning and scouring 7.3 General importance, strength of sewage, Characteristics of sewage–physical, chemical & biological 7.4 Concept of sewage–sampling, tests for–solids, pH, dissolved oxygen, BOD, COD <b>Question discussion</b>
	28/08/2024	1	<b>INTERNAL ASSESSMENT EXAM</b>
	30/08/2024	1	<b>8. Sewerage system</b> 8.1 Types of system–separate, combined, partially separate, features, comparison between the types, suitability
10TH	02/09/2024	1	8.2 Shapes of sewer–rectangular, circular, avoid–features, suitability

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			8.3 Laying of sewer-setting out sewer alignment
	03/09/2024	2	<b>9.Sewer appurtenances and Sewage Disposal:</b> 9.1 Manholes and Lamp holes-types,features,location,functions 9.2 Inlets, Grease & oil trap – features, location, function
	04/09/2024	1	9.3 Storm regulator, inverted siphon – features, location, function
	06/09/2024	1	9.4Disposal on land–sewage farming,sewage application and dosing,sewage sickness-causes and remedies
11TH	10/09/2024	2	9.5Disposal by dilution–standards for disposal in different types of water bodies,self purification of stream
	11/09/2024	1	<b>CLASSTEST-II</b>
	13/09/2024	1	<b>10.Sewage treatment:</b> 10.1Principles of treatment, flow diagram of conventional treatment ,functions
12TH	17/09/2024	1	10.1Principles of treatment, flow diagram of conventional treatment ,functions
	18/09/2024	2	10.2Primary treatment–necessity, principles, essential features, functions
	20/09/2024	1	10.2Primary treatment–necessity, principles, essential features, functions
13TH	23/09/2024	1	10.3Secondarytreatment–necessity,principles Essential features, functions of secondary treatment unit
	24/09/2024	2	10.3Secondary treatment–necessity, principles Essential features, functions of secondary treatment unit
	25/09/2024	1	Essential features, functions of secondary treatment unit
	27/09/2024	1	<b>Sanitary plumbing for building:</b> 11.1Requirements of building drainage,layout of lavatory blocks in residential,buildings,

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			11.1layout of building drainage
14TH	30/09/2024	1	11.1layout of building drainage
	01/10/2024	2	11.2Plumbing arrangement of single storied & multistoried building as per I.S.code practice
	04/10/2024	1	11.2Plumbing arrangement of single storied & multistoried building as per I.S.codepractice
15TH	14/10/2024	1	11.3Sanitary fixtures–features,function,and maintenance and fixing of the fixtures–waterclosets,flushing cisterns,urinals,
	15/10/2024	2	11.3Sanitary fixtures–features,function,and maintenance and fixing of the fixtures–waterclosets,flushing cisterns,urinals,
	18/10/2024	1	11.3Sanitary fixtures–inspection chambers,traps,anti-syphonage pipe
16TH	21/10/2024	1	11.3Sanitary fixtures–inspection chambers,traps,anti-syphonage pipe
	22/10/2024	2	<b>SECTIONA:WATERSUPPLYENGG</b> <b>W/splumbinginbuilding</b> 5.1Methodofconnectionfromwatermainstobuildingsupply
	23/10/2024	1	<b>SECTIONA:WATERSUPPLYENGG</b> <b>W/splumbinginbuilding</b> 5.1Methodofconnectionfromwatermainstobuildingsupply
	25/10/2024	1	5.2General layout of plumbing arrangement for watersupply in single storied and multi-storied building as per I.S.code
17TH	28/10/2024	1	5.2General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S.code
	29/10/2024	2	5.2General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S.code
	30/10/2024	1	REVISION
	04/10/2024	1	REVISION
18TH	05/10/2024	1	REVISION

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	06/11/2024	2	REVISION
	08/11/2024	1	PREVIOUS YEAR QUESTION AND DISCUSSION
	01/07/2024	1	PREVIOUS YEAR QUESTION AND DISCUSSION