

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



**LESSON PLAN**

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

FACULTY: MAHAMRUTYUNJAYA SIVA PRASAD KAR

ACCADEMIC SESSION: 2022-23

SEMESTER: 5<sup>TH</sup>

SEC: C

Sd/-

H O D (Civil Engg.)

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<b>Discipline:</b> Civil Engineering	Semester : 5th (C)		<b>Name Of Teaching Faculty:-</b> MAHAMRUTYUNJAYA SIVA PRASAD KAR
<b>Subject:</b> Water Supply & Waste Water Engineering	No. of Days/week class allotted : 05 period per week (Tue,Wed,Thu,Fri,Sat-1 Period Each)		Semester From Date: 15-09-2022 to Date: 22-12-2022 No of Weeks: 14 weeks
<b>Week</b>	<b>Date</b>	<b>No of period available</b>	<b>Topics to be covered</b>
1ST	15/09/2022	1	<b>1 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 and factors affectingdemand
	16/09/2022	1	1.3 Methods of forecasting population,
2ND	20/09/2022	1	Numerical problems using different methods
	21/09/2022	1	1.4 Impurities in water – organic and inorganic, Harmful effects of impurities
	22/09/2022	1	1.5 Analysis of water –physical, chemical,
	23/09/2022	1	Bacteriological analysis of water
	24/09/2022	1	1.6 Water quality standards for different use

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3RD	27/09/2022	1	<b>2 Sources and Conveyance of water</b> 2.1 Surface sources – Lake, stream, river and impounded reservoir
	28/09/2022	1	2.2 Underground sources – aquifer type occurrence – Infiltration gallery, infiltration well, springs, well
	29/09/2022	1	2.3 Yield from well- methods of determination, Numerical problems using yield formulae ( deduction excluded)
	30/09/2022	1	2.4 Intakes – types, description of river intake, reservoir intake, canal intake
	01/10/2022	1	2.5 Pumps for conveyance & distribution – types, selection, installation
4TH	11/10/2022	1	2.6 Pipe materials – necessity, suitability, merits& demerits of each type
	12/10/2022	1	2.7 Pipe joints – necessity, types of joints, suitability, methods of jointing, Laying of pipes – method
	13/10/2022	1	<b>3 Treatment of water</b> 3.1 Flow diagram of conventional water treatment system 3.2 Treatment process / units : 3.2.1 Aeration ; Necessity
	14/10/2022	1	3.2.2 Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	15/10/2022	1	3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)

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5TH	18/10/2022	1	3.2.4 Filtration : Necessity, principles, Types of filters, Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	19/10/2022	1	3.2.4 Filtration : Necessity, principles, Types of filters, Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential feature
	20/10/2022	1	MONTHLY CLASS TEST-I
	21/10/2022	1	3.2.5 Disinfection : Necessity, methods of disinfection
	22/10/2022	1	Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination
6TH	25/10/2022	1	3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method
	26/10/2022	1	<b>4 Distribution system And Appurtenance in distribution system:</b> 4.1 General requirements, types of distribution system-gravity, direct and combined 4.2 Methods of supply – intermittent and continuous
	27/10/2022	1	4.3 Distribution system layout – types, comparison, suitability
	28/10/2022	1	4.4 Valves-types, features, uses, purpose-slucice valves, check valves, air valves, scour valves, Fire hydrants, Water meter
	29/10/2022	1	<b>5 Water supply Plumbing in building :</b> 5.1 Method of connection from water mains to building supply
7TH	01/11/2022	1	5.2 General layout of plumbing arrangement for water supply in single storied, Plumbing arrangement for water supply in multi-storied building as per I.S. code

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	02/11/2022	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
	03/11/2022	1	6.3 Systems of collection of wastes– Conservancy and Water Carriage System –features, comparison, suitability
	04/11/2022	1	<b>7 Quantity and Quality of sewage</b> 7.1 Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow
	05/11/2022	1	Numerical problem on computation quantity of sanitary sewage
8TH	09/11/2022	1	7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
	10/11/2022	1	Numerical on Computation of size of Sewer
	11/11/2022	1	7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
	12/11/2022	1	<b>MONTHLY CLASS TEST -II</b>
9TH	15/11/2022	1	INTERNAL ASSESSMENT
	16/11/2022	1	INTERNAL ASSESSMENT
	17/11/2022	1	7.4 Concept of sewage sampling, tests for – Total solids, pH
	18/11/2022	1	Test for dissolved oxygen, BOD,COD
	19/11/2022	1	<b>8 Sewerage system</b> 8.1 Types of system-separate, combined, partially separate features,

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			comparison between the types, suitability
10TH	22 /11/2022	1	8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability
	23/11/2022	1	8.3 Laying of sewer-setting out sewer alignment
	24/11/2022	1	<b>9 Sewer appurtenances and Sewage Disposal:</b> 9.1 Manholes and Lamp holes – types, features, location, function
	25/11/2022	1	9.2 Inlets, Grease & oil trap features, location, function
	26/11/2022	1	9.3 Storm regulator, inverted siphon – features, location, function
11TH	29/11/2022	1	9.4 Disposal on land – sewage farming
	30/11/2022	1	Sewage application and dosing, Sewage sickness-causes and remedies
	01/12/2022	1	9.5 Disposal by dilution – standards for disposal in different types of water bodies,
	02/12/2022	1	Self purification of stream
	03/12/2022	1	<b>10 Sewage treatment :</b> 10.1 Principles of treatment, flow diagram of conventional treatment
12TH	06/12/2022	1	10.2 Primary treatment – necessity, principles, essential features, functions
	07/12/2022	1	10.2 Primary treatment – necessity, principles, essential features, function
	08/12/2022	1	10.3 Secondary treatment – necessity, principles

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	09/12/2022	1	10.3 Secondary treatment – necessity, principles
	10/12/2022	1	Essential feature, function of Secondary Treatment of waste water
13TH	13/12/2022	1	<b>11 Sanitary plumbing for building :</b> 11.1 Requirements of building drainage
	14/12/2022	1	Layout of lavatory blocks in residential buildings, layout of building drainage
	15/12/2022	1	11.2 Plumbing arrangement of single storied & multi storied building as per I.S. code practice
	16/12/2022	1	Monthly Class Test-3
	17/12/2022	1	11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
14TH	20/12/2022	1	Revision
	21/12/2022	1	Previous Year Questions and Answers Discussion
	22/12/2022	1	Previous Year Questions and Answers Discussion