BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

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

ACADEMIC SESSION: 2024-25

FACULTY: SARTHAK SAHOO (GUEST FACULTY)

SEMESTER: 5TH

SEC: B

Sd/-

H O D (Civil Engg.)

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Discipline: Civil Engineering	**Semester:** **5TH(B)**		**Name of teaching faculty:** **SARTHAK SAHOO**
Subject: **WATER SUPPLY AND WASTE WATER ENGG.**	**No. of days/ per week class allotted : 05 period per week** **(Mon-02;Wed-01;Fri-02)**		**Semester from date : 01/07/2024** **To date : 08/11/2024** **No of week : 19**
Week	**Class day**	**No of period available**	**Theory topics**
1ST	01/07/2024	2	**Introduction to Water Supply, Quantity and Quality of water** 1.1 Necessity of treated water supply 1.2 Per capita demand, variation in demand
	03/07/2024	1	factors affecting demand
	05/07/2024	2	1.3 Methods of forecasting population, Numerical problems using different methods
2ND	08/07/2024	2	Numerical problems using different method
	10/07/2024	1	1.4 Impurities in water– organic and inorganic, Harmful effects of impurities
	12/07/2024	2	1.5 Analysis of water–physical, chemical and bacteriological 1.6 Water quality standards for different uses
3RD	15/07/2024	2	**Sources and Conveyance of water** **2.1** Surface sources–Lake, stream, river and impounded reservoir 2.2 Underground sources– aquifer type & occurrence Infiltration gallery, infiltration well, springs.
	19/07/2024	2	2.3 Yield from well methods of determination, Numerical problems using yield formulae

4TH	22/07/2024	2	2.4 Intakes– types, description of river intake, reservoir intake, canal intake 2.5 Pumps for conveyance & distribution– types, selection, installation.
	24/07/2024	1	2.6 Pipe materials– necessity, suitability, merits & Demerits of each type
	26/07/2024	2	2.7 Pipe joints –necessity, types of joints, suitability, methods of jointing, Laying of pipes– method
5TH	29/07/2024	2	**3.Treatment of water** 3.1 Flow diagram of conventional water treatment system 3.2Treatment process/units: 3.2.1Aeration; Necessity
	31/07/2024	1	3.2.2 Plain Sedimentation: Necessity Working principles, Sedimentation tanks–types, essential features, operation & maintenance
	02/08/2024	2	3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation
6TH	05/08/2024	2	Types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only) 3.2.4 Filtration: Necessity, principles
	07/08/2024	1	Types of filter, Slow Sand Filter, Rapid Sand Filter and Pressure Filter– essential features
	09/08/2024	2	3.2.5 Disinfection: Necessity, methods of disinfection Chlorination– free and combined chlorine demand
7TH	12/08/2024	2	Available chlorine, residual chlorine, pre-chlorination, break point chlorination, super-chlorination 3.2.6 Softening of water– Necessity, Methods of softening
	14/08/2024	1	Lime soda process and Ion exchange method
	16/08/2024	2	**4.Distribution system And Appurtenance in distribution system:** 4.1General requirements, types of distribution system-gravity, direct and combined
8TH	21/08/2024	1	**CLASSTEST-I**
	23/08/2024	2	4.2 Methods of supply– intermittent and continuous

9TH	28/08/2024	1	4.3 Distribution system layout– types, comparison, suitability
	30/08/2024	2	4.4 Valves- types, features, uses, purpose- sluice valves, check valves, air valves scour valves, Fire hydrants, Water meters
10TH	02/09/2024	2	**SECTION B: WASTE WATER ENGINEERING** **6 Introduction** 6.1 Aims and objectives of sanitary engineering
	04/09/2024	1	6.2 Definition of terms related to sanitary engineering
	06/09/2024	2	6.3 Systems of collection of wastes– Conservancy and Water Carriage System– features, comparison, suitability
11TH	09/09/2024	2	***7.* Quantity and Quality of sewage** 7.1 Quantity of sanitary sewage– domestic & industrial sewage, variation in sewage flow
	11/09/2024	1	Numerical problem on computation quantity of sanitary sewage
	13/09/2024	2	7.2 Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
12TH	18/09/2024	1	**INTERNAL ASSESSMENT EXAM**
	20/09/2024	2	7.3 General importance, strength of sewage, Characteristics of sewage- physical, chemical & biological
13TH	23/09/2024	2	7.4 Concept of sewage- sampling, tests for–solids, pH, dissolved oxygen, BOD, COD **Question discussion**
	25/09/2024	1	**8. Sewerage system** 8.1 Types of system-separate, combined, partially separate, features, comparison between the types, suitability
	27/09/2024	2	8.2 Shapes of sewer– rectangular circular, avoid- features, suitability 8.3 Laying of sewer-setting out sewer alignment
14TH	30/09/2024	2	**9. Sewer appurtenances and Sewage Disposal:** 9.1 Manholes and Lamp holes-types, features, location, functions 9.2 Inlets, Grease & oil trap – features, location, function
	04/10/2024	1	9.3 Storm regulator, inverted siphon – features, location, function 9.4Disposal on land– sewage farming, sewage application and dosing, sewage sickness- causes and remedies

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15TH	14/10/2024	1	9.5 Disposal by dilution–standards for disposal in different types of waterbodies, self purification of stream **10.Sewage treatment:** 10.1 Principles of treatment, flow diagram of conventional treatment
	16/10/2024	2	10.2 Primary treatment– necessity, principles, essential features, functions
16TH	21/10/2024	2	10.3 Secondary treatment– necessity, principles essential features, functions of secondary treatment unit
	23/10/2024	1	**CLASSTEST-II**
	25/10/2024	2	**Sanitary plumbing for building:** 11.1 Requirements of building drainage, layout of lavatory blocks in residential, buildings,
17TH	28/10/2024	2	11.2 Plumbing arrangement of single storied & multi storied building as per I.S.code practice 11.3Sanitaryfixtures–features,function,andmaintenanceandfixingofthefixtures–waterclosets,flushingcisterns,urinals,
	30/10/2024	1	**SECTIONA: WATER SUPPLY ENGG** **W/s plumbing in building** 5.1 Method of connection from water mains to building supply
	01/11/2024	2	5.2 General layout of plumbing arrangement for water supply in single storied and multi- storied building as per I.S.code
18TH	04/11/2024	2	**CLASS TEST-III**
	06/11/2024	1	REVISION
	08/11/2024	2	PREVIOUS YEAR QUESTION AND DISCUSSION