LESSON PLAN FOR WINTER SESSION (2024-25)

PROGRAMME : CIVIL ENGINEERING	NAME OF THE FACULTY: GUEST FACULTY
COURSE NAME : WATER SUUPLY AND WASTE WATER ENGINEERING	SESSION : 2024-25
COURSE CODE : TH.4	DATE : 01/07/24 To 08/11/24
SEMESTER : 5th	
PERIODS/WEEK: 5	
TOTAL PERIODS:75	

WEEK	PERIODS	UNIT	TOPICS
Jul. 1st Week	1	1 of Sec. A	**SECTION A: WATER SUPPLY** **1. Introduction to Water Supply, Quantity and Quality of water** 1.1 Necessity of treated water supply.
	2		1.1 Necessity of treated water supply.
	3		1.2 Per capita demand, variation in demand and factors affecting demand
	4		1.3 Methods of forecasting population and Numerical problems using different methods for forecasting population.
	5		1.3 Methods of forecasting population and Numerical problems using different methods for forecasting population.
Jul . 2nd Week	6		1.4 Impurities in water – organic and inorganic, Harmful effects of impurities
	7		1.5 Analysis of water –physical, chemical and bacteriological
	8		1.6 Water quality standards for different uses
	9	2 of Sec. A	**2. Sources and Conveyance of water** 2.1 Surface sources – Lake, stream, river and impounded reservoir
	10		2.2 Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
Jul. 3rd Week	11		2.3 Yield from well- method s of determination, Numerical problems using
	12		2.3 Yield from well- method s of determination, Numerical problems using yield formulae
	13		2.4 Intakes – types, description of river intake, reservoir intake, canal intake
	14		2.5 Pumps for conveyance & distribution – types, selection, installation.
	15		2.6 Pipe materials – necessity, suitability, merits & demerits of each type.
Jul. 4th Week	16		2.7 Pipe joints – necessity, types of joints, suitability, methods of jointing,Laying of pipes – method.
	17		**3. Treatment of water** 3.1 Flow diagram of conventional water treatment system
	18		3.2 Treatment process / units : 3.2.1 Aeration ; Necessity
	19		3.2.2 Plain Sedimentation : Necessity, working principles-Sedimentation tanks – types, essential features, operation & maintenance.
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WEEK	PERIODS	UNIT	TOPICS
Aug. 1st Week	21	3 of Sec. A	3.2.3 Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier.
	22		3.2.4 Filtration : Necessity, principles, types of filters, Slow Sand Filter
	23		Rapid Sand Filter and Pressure Filter – essential features.
	24		3.2.5 Disinfection : Necessity, methods of disinfection , Chlorination – free and combined chlorine demand ,
	25		Available chlorine, residual chlorine, pre-chlorination, break point chlorination, super- chlorination.
Aug. 2nd Week	26		3.2.6 Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method.
	27	4 of Sec. A	**4. Distribution system And Appurtenance in distribution system:** 4.1 General requirements, types of distribution system-gravity, direct and combined.
	28		4.2 Methods of supply – intermittent and continuous.
	29		4.3 Distribution system Layout – types, comparison, suitability.
	30		4.3 Distribution system Layout – types, comparison, suitability.
Aug. 3rd Week	31		4.4 Valves-types, features, Purpose-sluice valves, check valves, air valves, Scour valves, Fire hydrants, Water meters.
	32		4.4 Valves-types, features, Purpose-sluice valves, check valves, air valves, Scour valves, Fire hydrants, Water meters.
	33	6 of Sec. B	**SECTION B: WASTE WATER ENGINEERING** **6. Introduction** 6.1 Aims and objectives of sanitary engineering
	34		6.2 Definition of terms related to sanitary engineering.
	35		6.2 Definition of terms related to sanitary engineering.
Aug. 4th Week	36		6.3 Systems of collection of wastes– Conservancy-Water Carriage System – features, comparison, suitability
	37		6.3 Systems of collection of wastes– Conservancy-Water Carriage System – features, comparison, suitability
	38	7 of Sec. B	**7. 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
	39		7.2 Computation of size of sewer, application of Chazy's formula and Limiting velocities of flow : self-cleaning and scouring
	40		7.2 Computation of size of sewer, application of Chazy's formula and Limiting velocities of flow : self-cleaning and scouring

WEEK	PERIODS	UNIT	TOPICS
Sept. 1st Week	41		7.3 General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological.
	42		7.4 Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD.
	43	8 of Sec. B	**8. Sewerage system** **8.1** Types of system-separate, combined, partially separate & Comparison between the types, suitability
	44		8.2 Shapes of sewer – rectangular, circular, avoid-features, suitability
	45		8.3 Laying of sewer-setting out sewer alignment
Sept. 2nd Week	46	**Internal Assessment Exam**	
	47	9 of Sec. B	**9.0 Sewer appurtenances and Sewage Disposal:** **9.1** Manholes and Lamp holes – types, features, location, function
	48		9.1 Manholes and Lamp holes – types, features, location, function
	49		9.2 Inlets, Grease & oil trap – features, location, function
	50		9.3 Storm regulator, inverted siphon – features, location, function
Sept. 3rd Week	51		9.3 Storm regulator, inverted siphon – features, location, function
	52		9.4 Disposal on land – sewage farming, sewage application and dosing,
	53		9.4 Disposal on land – sewage farming, sewage application and dosing,
	54		9.5 Disposal by dilution – standards for disposal in different types of water
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Sept. 4th Week	56	10 of Sec. B	**10. Sewage treatment :** 10.1 Principles of treatment, flow diagram of conventional treatment
	57		10.1 Principles of treatment, flow diagram of conventional treatment
	58		10.1 Principles of treatment, flow diagram of conventional treatment
	59		10.2 Primary treatment – necessity, principles
	60		10.2 Primary treatment –essential features, functions
Oct. 1st Week	61		10.2 Primary treatment –essential features, functions
	62		10.3 Secondary treatment – necessity, principles
	63		10.3 Secondary treatment – essential features, functions
	64		10.3 Secondary treatment – essential features, functions
	65		**Monthly Test**
Oct. 2nd Week	**Puja Holidays**		

WEEK	PERIODS	UNIT	TOPICS
Oct. 3rd Week	66	11 of Sec. B	**11. Sanitary plumbing for building :** 11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	67		11.1 Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
	68		11.2 Plumbing arrangement of single storied & multi storied building as per
	69		11.2 Plumbing arrangement of single storied & multi storied building as per
	70		11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers,
Oct. 4th Week	71		11.3 Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers,
	72	5 of Sec. A	**5. W/s plumbing in building :** 5.1 Method of connection from water mains to building supply
	73		5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	74		5.2 General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
	75		**Monthly Test**
Oct. 5th Week	76		**Doubt Clearing Class**
	77		**Doubt Clearing Class**
	78		**Doubt Clearing Class**
	79		**Doubt Clearing Class**
	80		**Previous year question Paper discussion.**
Nov. 1st Week	81		**Previous year question Paper discussion.**
	82		**Previous year question Paper discussion.**
	83		**Previous year question Paper discussion.**
	84		**Previous year question Paper discussion.**
	85		**Previous year question Paper discussion.**

Arabinda Sahu
Dt-16/8/24
Concern faculty
Signature

28/6/24
HOD
Civil engineering

Academic Coordinator
GP Nabarangpur

Principal
GP Nabarangpur