GOVT. POLYTECHNIC MAYURBHANJ
LESSON PLAN- 2020/21 (WINTER)

Discipline : CIVIL ENGG.	Semester: 5th	Name of the Teaching Faculty :SUBHASMITA NAIK
Subject : WATER SUPPLY & WASTE WATER ENGG. (TH.4)	No. of Days / per week class allotted : 05	Semester From date : 01.09.2020 To Date : 31.12.2020

MONTH	Week	Day	Unit	Topics
SEPTEMBER	1ST		UNIT-I	**Introduction to Water Supply, Quantity and Quality of water**
		2ND		Necessity of treated water supply, Per capita demand, variation in demand and factors affecting demand
		3RD		Methods of forecasting population, Numerical problems using different methods
		4TH		Methods of forecasting population, Numerical problems using different methods
				Impurities in water – organic and inorganic, Harmful effects of impurities
		5TH		Analysis of water –physical, chemical and bacteriological,Water quality standards for different uses
			UNIT-II	**Sources and Conveyance of water**
		5TH		Surface sources – Lake, stream, river and impounded reservoir
	2ND	1ST		Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
		2ND		Yield from well- method s of determination, Numerical problems using yield formulae (deduction excluded)
				Intakes – types, description of river intake, reservoir intake, canal intake
		3RD		Pumps for conveyance & distribution – types, selection, installation.
		5TH	UNIT-III	**Treatment of water**
	3RD	1ST		Flow diagram of conventional water treatment system
		2ND		Treatment process / units :
		3RD		Aeration ; Necessity
		5TH		Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
		1ST		Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier (Definition and concept only)
		2nd		Filtration : Necessity, principles, types of filters
		2ND		Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential features
	4TH	3RD		Disinfection : Necessity, methods of disinfection

		4TH		Chlorination – free and combined chlorine demand, available chlorine, residual chlorine, pre-chlorination, break point chlorination, super- chlorination
		5TH		Softening of water – Necessity, Methods of softening – Lime soda process and Ion exchange method (Concept Only)
	5TH	1ST	UNIT-IV	**Distribution system And Appurtenance in distribution system:**
		2ND		General requirements, types of distribution system-gravity, direct and combined
		3RD		Methods of supply – intermittent and continuous
	1ST	4TH		Distribution system layout – types, comparison, suitability
		1ST		Valves-types, features, uses, purpose-sluice valves, check valves, air valves, scour valves, Fire hydrants, Water meters
		2nd	UNIT-V	**W/s plumbing in building :**
	2ND	3RD		Method of connection from water mains to building supply
		4TH		General layout of plumbing arrangement for water supply in single storied and multi-storied building as per I.S. code.
		5TH	UNIT-VI	**Introduction: Waste water Engineering**
		1ST		Aims and objectives of sanitary engineering,Definition of terms related to sanitary engineering
		2nd		Systems of collection of wastes– Conservancy and Water Carriage System – features, comparison, suitability
	3RD	3RD	UNIT-VII	**Quantity and Quality of sewage**
		4TH		Quantity of sanitary sewage – domestic & industrial sewage, variation in sewage flow, numerical problem on
		5TH		Computation of size of sewer, application of Chazy's formula, Limiting velocities of flow : self-cleaning and scouring
		1ST		General importance, strength of sewage, Characteristics of sewage-physical, chemical & biological
	4TH	2ND		Concept of sewage-sampling, tests for – solids, pH, dissolved oxygen, BOD, COD
		3RD	UNIT-VIII	**Sewerage system**
		4TH		Types of system-separate, combined, partially separate , features, comparison between the types, suitability
		2ND		Shapes of sewer – rectangular, circular, avoid-features, suitability
	5TH	3RD		Laying of sewer-setting out sewer alignment
		4TH	UNIT-IX	**Sewer appurtenances and Sewage Disposal:**
		1ST		Manholes and Lamp holes – types, features, location, function
		2ND		Inlets, Grease & oil trap – features, location, function,Storm regulator, inverted siphon – features, location, function
	1ST	3RD		Disposal on land – sewage farming, sewage application and dosing,sewage sickness-causes and remedies

OCTOBER

		4TH		Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream
		5TH	UNIT-X	**Sewage treatment :**
NOVEMBER	2ND	1ST		Principles of treatment, flow diagram of conventional treatment
		2ND		Primary treatment – necessity, principles, essential features, functions
		3RD		Primary treatment – necessity, principles, essential features, functions
		4TH	UNIT-XI	Secondary treatment – necessity, principles, essential features, functions
		5TH		Secondary treatment – necessity, principles, essential features, functions
	3RD	1ST		**Sanitary plumbing for building :**
		2ND		Requirements of building drainage, layout of lavatory blocks in residential buildings, layout of building drainage
		3RD		Plumbing arrangement of single storied & multi storied building as per I.S. code practice
		4TH		Sanitary fixtures – features, function, and maintenance and fixing of the fixtures – water closets, flushing cisterns, urinals, inspection chambers, traps, anti-syphonage pipe
		5TH		REVISION
	4TH	1ST		REVISION
		2ND		REVISION
		3RD		PREVIOUS YEAR QUESTION DISCUSSION
		4TH		PREVIOUS YEAR QUESTION DISCUSSION
		5TH		PREVIOUS YEAR QUESTION DISCUSSION

01/09/20
Subject Expert

01/09/20
HOD
Civil Department

Academic
Co-ordinator