GOVT. POLYTECHNIC BOLANGIR
LESSON PLAN

Discipline : Civil	Semester: 5TH	Name of the Teaching Faculty :Kshirod Bihari Rana
Subject : Water Supply and Waste Water Engineering	No. of Days / per week class allotted : 5	Semester From date : 1.11.2021 To Date : 08.01.2021 No. of Weesks :10
Week	**Class Day**	**Topics**
1ST NOV	1st	**WATER SUPPLY** : Introduction
	2nd	Necessity of treated water supply
	3rd	Per capita demand variation in demand
	4th	factors affecting demand
	5th	Methods of forecasting population
2ND NOV	1st	Methods of forecasting population
	2nd	Impurities in water – organic and inorganic, Harmful effects of impurities
	3rd	Analysis of water –physical, chemical
	4th	Analysis of water –physical, chemical
	5th	Analysis of water bacteriological, Water quality standards for different uses
3RD NOV	1st	Sources and Conveyance of water Surface sources – Lake, stream, river and impounded reservoir
	2nd	Underground sources – aquifer type & occurrence – Infiltration gallery, infiltration well, springs, well
	3rd	Yield from well- method s of determination, Numerical problems using yield formulae
	4th	Intakes – types, description of river intake, reservoir intake, canal intake
	5th	Pumps for conveyance & distribution – types, selection, installation. Pipe materials – necessity, suitability, merits & demerits of each type
4TH NOV	1st	Pipe joints – necessity, types of joints, suitability, methods of jointing Laying of pipes – method
	2nd	Treatment of water Flow diagram of conventional water treatment system
	3rd	Plain Sedimentation : Necessity, working principles, Sedimentation tanks – types, essential features, operation & maintenance
	4th	Sedimentation with coagulation: Necessity, principles of coagulation, types of coagulants, Flash Mixer, Flocculator, Clarifier
	5th	Filtration : Necessity, principles, types of filters Slow Sand Filter, Rapid Sand Filter and Pressure Filter – essential

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

1ST JAN	1st	Disposal by dilution – standards for disposal in different types of water bodies, self purification of stream, different types of water bodies, self purification of stream
	2nd	sewage application and dosing, sewage sickness-causes and remedies
	3rd	Introduction to Sewage treatment , Principles of treatment, flow diagram of conventional treatment
	4th	Primary treatment – necessity, principles, Primary treatment essential features, functions
	5th	Secondary treatment – necessity, principles, Secondary treatment –essential features, functions
2ND JAN	1st	Sanitary plumbing for building Introduction, Requirements of building drainage, layout of lavatory blocks in residential
	2nd	layout of building drainage, Plumbing arrangement of single storied ,
	3rd	Plumbing arrangement of multi storied building as per I.S. code practice, Sanitary fixtures – features
	4th	function, and maintenance, fixing of the fixtures – water closets, flushing cisterns, urinals,
	5th	inspection chambers traps, antisyphonage pipe, Revision