

TEACHING PLAN FOR THEORY

Name of Subject Teacher: PUSHKAR BHAMARE

Subject: ENVIRONMENTAL ENGG -II Class: B.E. CIVIL - A & B Branch: CIVIL

Lecture No	Scheduled Date	Topics to be covered on the scheduled date
		Introduction to Environmental waste water design and its application on the field
1	15/6/2017	UNIT I Sewage quantity: Collection and conveyance of sewage, sources of sewage, variations in sewage flow,
2	19/06/2017	Flow quantity estimation
3	21/06/2017	Design of circular sanitary sewers. Pumping of sewage, necessity, location. Effect of change of life style on sewage quality
4	23/06/2017	Characteristics of sewage: Physical characteristics, effluent discharge standards as per CPCB norms, interpretation and practical significance of test results
5	26/06/2017	chemical and biological characteristics, effluent discharge standards as per CPCB norms
6	28/06/2017	Stream sanitation: Self-purification of natural streams, river classification as per MoEF & CC,
7	29/06/2017	UNIT II Introduction to sewage treatment, preliminary, primary, secondary and tertiary treatment,

8	03/07/2017	Process flow diagram for sewage treatment, Theory and design of screen chamber,
9	05/07/2017	Grit Chamber
10	06/07/2017	application
11	10/07/2017	Primary sedimentation tank as per the Manual of CPHEEO
12	12/07/2017	UNIT III Introduction to unit operations and processes for secondary treatment. Principles of biological treatments, important microorganisms in waste water & their importance in waste water treatment systems, bacterial growth, general growth pattern,
13	13/07/2017	Growth in terms of bacterial numbers and bacterial mass. Kinetics of biological growth, cell growth, substrate limited growth, cell growth and substrate utilization, effect of endogenous metabolism
14	17/07/2017	Activated sludge process: Theory and design of ASP, sludge volume index,
15	19/07/2017	sludge bulking & control, modifications in ASP
16	20/07/2017	Trickling filter: Biological principle, different T.F media & their characteristics, design of standard rate and high rate filters using NRC formula,
17	24/07/2017	single stage & two stage filters, recirculation, ventilation, operational problems, control measures, theory of rotating biological contractors
18	26/07/2017	UNIT IV Oxidation pond: Bacteria – algae symbiosis
19	27/07/2017	design of oxidation pond as per the manual of CPHEEO, advantages & disadvantages of oxidation ponds
20	31/07/2017	Aerated lagoons: Principle, aeration method, advantages & disadvantages of aerated Lagoons,
21	02/08/2017	design of aerated lagoon
22	03/08/2017	Introduction and theory of Phytoremediation technology for wastewater treatment.

23	07/08/2017	Introduction and theory of root zone cleaning system, Working principle, advantages and disadvantages
24	09/08/2017	UNIT V Anaerobic digester: Principle of anaerobic digestion,
25	10/08/2017	stages of digestion,
26	14/08/2017	bio – gas production its characteristics & application, factors governing anaerobic digestion
27	16/08/2017	Dewatering of sludge by gravity thickener, sludge drying bed, decanters.
28	17/08/2017	Methods of sludge treatment and disposal, advantages & disadvantages.
29	21/08/2017	Up-flow Anaerobic Sludge Blanket (UASB) Reactor– Principle, advantages & disadvantages
30	23/08/2017	UNIT VI Methods of sampling. Equalization and neutralization.
31	24/08/2017	Application of preliminary, primary and secondary treatment for industrial wastewater as per the CPCB norms
32	28/08/2017	Sources of waste water generation from manufacturing process,
33	30/08/2017	characteristics of effluent, different methods of treatment & disposal of effluent for the following industries:
34	31/08/2017	Sugar industry
35	04/09/2017	dairy and distillery. Discharge standards as per CPCB norms
36	06/09/2017	NUMERICAL