

**TENTATIVE TEACHING PLAN**

Dec.01.2001

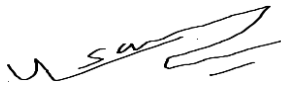
**DEPARTMENT/INSTITUTE/DIRECTORATE: Civil Engineering**Department: **Civil Engineering**Name of Teacher: **Hafiz Usama Imad**Subject: **Environmental Engineering - II** Course Code: **CE431**Batch: **19CE (A+C)** Year: **4th** Semester: **8<sup>th</sup>**Semester Starting Date: **03-07-2023** Semester Suspension Date: **20-10-2023****Course Learning Outcomes (CLOs):** Upon successful completion of the course, the student will be able to:

CLO No.	Description	Taxonomy Level	Linking to PLOs
1	DESCRIBE various characteristics of municipal and industrial wastewater and its composition, solid waste management, air and noise pollution	C2	1
2	EXPLAIN wastewater collection and conveyance systems, understanding the management tools for solid waste reduction, reuse and recycling.	C2	2
3	DESIGN the wastewater treatment plant and manage the hazardous waste for societal and environmental sustainability.	C6	7

S. #	TOPICS	CLO	PLO	No. of Lecture Required
<b>Air and Noise Pollution</b>				
1.	Air pollution: their origin, sources, types, effects, and dispersion	1	1	1
2.	Control of air pollutants, air emission measurement and control, ambient air quality	1	1	2
3.	Noise pollution: concept of sound and sound pressure level, noise sources and their effects on health.	1	1	2
4.	Acoustic environmental criteria (safety and health at work), Noise measurement and control	1	1	2
<b>Solid and Hazardous Waste Management</b>				
5.	Characteristics of solid waste.	1	1	1
6.	Waste minimization: recycling reuse of solid waste, composting.	1	1	1
7.	Generation-collection-transferring-and disposal of waste (incineration and landfill options)	1	1	3
8.	Hazardous waste: classification and treatment, contaminated sites and their remedies.	1	1	2
<b>Wastewater Engineering and Wastewater Quality</b>				
9.	Introduction of wastewater engineering Wastewater terminology. Characteristics of municipal industrial wastewater.	1	1	2
10.	Wastewater composition. Sampling techniques. Wastewater quality and analysis. quality parameters/monitoring	1	1	3
<b>Waste water Infrastructure (collection and conveyance)</b>				
11.	Sewerage systems, methods of carrying wastewater and its disposal, sewer materials, shapes, fittings and joints	1	1	2
12.	Design of sewers, laying and testing of sewers, ventilation of sewers, cleaning of sewers	1	1	2
13.	Surface drains, sewer appurtenances, house drainage system	1	1	1

<b>Wastewater Treatment Unit Processes/Operations</b>				
14.	Estimating wastewater quantity	2	2	1
15.	Conventional wastewater treatment systems,	2	2	1
16.	Municipal wastewater treatment unit processes	2	2	1
17.	physical treatment methods	2	2	1
18.	Biological treatment methods	2	2	1
19.	chemical treatment methods	2	2	1
20.	special/physicochemical treatment methods	2	2	1
21.	Sludge disposal and reuse	2	2	1
22.	Wastewater reclamation and reuse	2	2	1
23.	Natural treatment self-purification systems	2	2	1
<b>Design of a Wastewater Treatment Plant</b>				
24.	Design of bar racks and screens, grit chambers, sedimentation tanks (detritus tanks, skimming tanks),	3	7	2
25.	Activated sludge processes, aerated lagoons	3	7	3
26.	Trickling filters, Rotating biological contractors,	3	7	3
27.	Stabilization ponds, nutrients, odor and VOCs control	3	7	1
28.	Sludge thickeners and digesters, Composting units, Dewatering equipment, Wetlands	3	7	2
<b>Small Wastewater Treatment Systems</b>				
29.	Small wastewater systems and characteristics. Design of on-site systems: septic tanks, Imhoff tanks, Pit latrines.	3	7	3
<b>TOTAL</b>				<b>48</b>

Signature of Teacher:



Dated: 03-07-2023

Remarks by DMRC: **APPROVED**

Signature of Chairman:



Dated: 1/08/2023