MEHRAN UNIUVERSITY OF ENGINEERING AND TECHNOLOGY

FRM-001/00QSP-004

TENTATIVE TEACHING PLAN Dec.01.2001

DEPARTMENT/INSTITUTE/DIRECTORATE: Civil Engineering

Department: **Civil Engineering**

Name of Teacher: **Prof. Dr. Ashfaque Ahmed Pathan**

Subject: **Environmental Engineering - II** Course Code: **CE431**

Batch: **20CE (B+D)** Year: **4th** Semester: **7th**

Semester Starting Date: **20-11-2023** Semester Suspension Date: **29-03-2024**

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

15.	Biological treatment methods, special/physico-chemical and chemical treatment methods. Sludge disposal and reuse. Wastewater reclamation and reuse.	2	3
16.	Natural treatment self-purification systems	2	1
Design of a Wastewater Treatment Plant			
17.	Design of bar racks and screens, grit chambers, sedimentation tanks (detritus tanks, skimming tanks),	3	2
18.	Activated sludge processes, aerated lagoons	3	3
19.	Trickling filters, Rotating biological contractors,	3	3
20.	Stabilization ponds, nutrients, odor and VOCs control	3	1
21.	Sludge thickeners and digesters, Composting units, Dewatering equipment, Wetlands	3	1
Small Wastewater Treatment Systems			
22.	Small wastewater systems and characteristics. Design of on-site systems: septic tanks, Imhoff tanks, Pit latrines.	3	3
	TOTAL		45

Signature of Teacher: Dated: 15/11/2023

Remarks by DMRC: **APPROVED**

Signature of Chairman: Dated: 21/12/2023