

MEHRAN UNIUVERSITY OF ENGINEERING AND TECHNOLO

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TENTATIVE TEACHING PLAN

FRM-001/00QSP-004 Dec.01.2001

DEPARTMENT/INSTITUTE/DIRECTORATE: <u>Civil Engineering</u>

Department:	Civil Engineering			
Name of Teacher:	Hafiz Usama Ima	d		
Subject:	Environmental Er	ngineering - II	Course Code:	CE431
Batch:	20CE (A+C)	Year: 4th	Semester:	$7^{\rm th}$
Semester Starting Dat	e: 20-11-2023		Semester Suspensio	on 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	PLO	No. of Lectur e Requir ed

Air and Noise Pollution					
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	
Solid and Hazardous Waste Management					
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	
Wastewater Engineering and Wastewater Quality					
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	
Waste water Infrastructure (collection and conveyance)					
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	

Wastewater Treatment Unit Processes/Operations				
14.	Estimating wastewater quantity		2	1
15.	Conventional wastewater treatment systems,		2	1
16.	Municipal wastewater treatment unit processes		2	1
17.	physical treatment methods	2	2	1
18.	Biological treatment methods		2	1
19.	chemical treatment methods		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
Design of a Wastewater Treatment Plant				
24.	Design of bar racks and screens, grit chambers, sedimentation tanks (detritus tanks, skimming tanks),	3	7	2
25.	Activated sludge processes, aerated lagoons		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
Small Wastewater Treatment Systems				
29.	Small wastewater systems and characteristics. Design of on-site systems: septic tanks, Imhoff tanks, Pit latrines.	3	7	3
	TOTAL			48

Signature of Teacher:

Remarks by DMRC: APPROVED

Signature of Chairman:

N.50

Dated: 21/12/2023

Dated: 18/12/2023