Environmental Engineering-I

Course Code	Credit Hours
CE-339	2-0

Course Description

This course introduces students to the fundamentals of environmental engineering. The course covers environmental regulations & standards, mass balance and natural systems, water supply, water quality management, water and wastewater treatment. The students will be trained in the methods used for water pollution control. Topics include the chemical, physical, and biological processes that occur in waste treatment design and in receiving waters; modeling schemes to determine allowable loadings in various bodies of water; and waste treatment processes used for water pollution control.

Text Book:

1. "Environmental Engineering", by Gerard Kiely, McGraw Hill Publishers
2. "A Text Book of Environmental Engineering", 2018 Edition by Arshad

Reference Book:

1. "Water Supply and Sewage", 5th Edition by E.W.Steel

Prerequisites :

Nil**.**

ASSESSMENT SYSTEM FOR THEORY

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

Teaching Plan

Week No	Topics/Learning Outcomes
1 - 2	Introduction to Environmental Engineering, major environmental problems, legislation and regulations, sources of drinking water pollution, major water pollution problems of Pakistan, WHO guidelines, NEQS, ISO standards etc.
3 - 4	Introduction to chemistry and microbiology of water and wastewater, sampling, water and wastewater quality parameters, concept of self-purification capacity of river etc.
5	Planning water works scheme, population forecasting, fire demand, factors affecting water consumption, average flow rates, maximum daily demand, peak hourly demand etc.
6 - 8	Water and wastewater treatment, designing of pumping station, approach channels and flow-equalization tanks.
9	Disinfection of water and advanced water/ wastewater treatment options
10	Distribution of water, material of pipes and fixtures, Hardy Cross Method
11-12	➢ Sewerage, methods of sewage disposal, design of sanitary and storm sewer, types of manhole etc.
13-14	Air and noise pollution and control, sources of agricultural and industrial pollution
15	Solid and hazardous waste management
16	Environmental management, waste minimization strategies, environmental impact assessment
17-18	**End Semester Exam**

Practical: Nil.