M. Tech. Environmental Engineering 1st Semester

S. No.	Course Code	Course Title	L	T	P	C
1	MA-501 A	Advanced Course in Mathematics	2	1	0	3
2	CE-501	Unit Processes (Dept. Core)	3	0	0	3
3	CE-502	Air and Noise Pollution	3	0	0	3
4	CE-503	Environmental Lab 1	0	0	3	2
5	-	Program Elective I	3	0	0	3
6	-	Program Elective II	3	0	0	3
7	-	Open Elective I	-	-	-	3
Total			X	X	X	20

L=Lecture hours/week P=Practical hours/week T=Tutorial hours/week C=Credits

M. Tech. In Environmental Engineering

CE 501 Unit Processes

Cr. 3: (3-0-0)

General Chemistry- Henry's law, activity & activity coefficient, Solubility product, common ion effect, Diverse ion effect, Coagulation; Flocculation; Settling; Filtration; Disinfection; Aeration and gas transfer process; Adsorption Basics of biochemistry- EMP & TCA cycles, Electron transport mechanism; Enzyme-substrate reactions, Continuous flow stirred tank reactor, Plug flow reactor; Fundamentals of Microbiology, Nutritional requirements, Environmental effects on microbial growth, Wastewater characteristics, Physical, chemical and biological characteristics of sewage; Kinetic relationships from microbiology applied for process design; Activated sludge Process and its modifications; Aeration and aeration systems; Treatment ponds and aerated lagoons; Trickling filters; Rotating biological contactors; Anaerobic digestion; Nitrification & De-nitrification.

Reference Books:

1. Chemistry for Environmental Engineering and Science: Sawyer, McCarty & Parkin
2. Wastewater Engineering: Treatment and Reuse: Metcalf &. Eddy
3. Waste water Treatment Plant: Design and Operation: Quasim
4. Wastewater Treatment for Pollution Control: Arceiwala

CE 502 Air and Noise Pollution

Cr. 3: (3-0-0)

Sources of air pollution; Classification of aerosols, Gases vapors, natural pollutants; Properties of air pollutants; Meteorological factors influencing dispersion of air pollutants; Gaussian plume model for dispersion of air pollutants and its applications; Effects on man, material, vegetation, art treasure; Air pollution disasters; Economic Effects of air pollution; Global Effects of Air pollution; Air pollution Due to Automobiles and emission control; General concept of transport planning for prevention of air pollution; Control technology for particulate and gaseous pollutants.

Basics of noise Pollution; Measurement of noise; permissible noise levels in different zones; Effects of noise.

Reference Books:

1. Air Pollution: Its Origin & Control: Wark, Warner & Davis
2. Air Pollution: Henry Crawford Perkins.
3. Noise Pollution and Control: S P. Singhal

CE 503 Environmental Lab - 1 Cr. 2: (0-0-3)

Water quality: principles of measurement and testing of water for parameters like pH, TDS, NO3, PO4-P, Hardness, Turbidity, residual chlorine, breakpoint

chlorination, DO, Chlorides, Jar test for coagulant dosing.
Waste water quality: COD, BOD, TOC, SS, VSS, heavy metals using AAS, Color Measurement and its removal using O3, Microscopy.
Reference Books:
1. Environmental Laboratory Manual , R.P. Mathur