

Branch Name:	Civil Engineering
Semester/Year:	Semester VII / Fourth Year
Subject Title:	Environment Pollution & Control (Elective - II)
Subject Code:	1ET1060704
Pre-requisite:	Environmental Engineering

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
03	02	00	05	70	30	-	-	100

Subject Contents			
Sr. No	Topic	Total Hours	Weightage (%)
1	Physicochemical Treatment Process: Theory, principles and types of aeration and gas transfer. Gas stripping, filtration through porous media, softening, disinfection, desalination, ion exchange, adsorption, membrane processes, electro dialysis, tertiary treatments of wastewater. physicochemical removal of dissolved organics, nutrient stripping, sludge dewatering and disposal, miscellaneous treatments like deflouridation etc.	12	25
2	Industrial Water and Wastewater: Water quality requirement for various industries, relevant IS standards and their significance. Composition and characteristics of following industrial wastewaters: Textile, dairy, food and fruit processing, brewery, pulp and paper mill, steel mill, fertilizer manufacturing unit, petrochemical, refinery, thermal power plants.	12	25
3	Instrumental Methods of Analysis: Advance instrumental methods of analysis, turbidity meter, colorimeter, spectrophotometer, flame photometer, AAS, polaro graph, chromatograph, etc. principles, calibration, range and applicability.	05	15
4	Environmental Chemistry: General chemistry, oxidation reduction equations in wastewater treatment, chemical precipitation, common ion effect, ion exchange chemistry.	05	15
5	Environmental Microbiology: Microbial growth & food requirements, various types & classification of microbes, microbiology of water & sewage, microbiology of milk, Environmental & Industrial microbiology, microbiology of air, Aquatic microbiology.	08	20

List of Reference Books:

1. Environmental Chemistry By Sawyer & McCarty
2. Physicochemical Treatment BY Weber & Weber
3. Industrial Wastewater Treatment By Eckenfelder
4. Wastewater Treatment By Metcalf & Eddy

E-Resources (If any):

<http://nptel.ac.in/>