

Branch Name:	Civil Engineering
Program Code:	ET106
Course Name:	Environmental Engineering
Course Code:	2ET1060403T
Pre-requisite Course:	Basic Knowledge of nature & Environment

Course Objective:

- The civil engineer must be aware of the environmental effects of pollutants
- To get knowledge about the water and waste water characteristics
- To get knowledge about various environmental laws

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3		-	3	24	60	16	40	-	-	-	-	100

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction: Components of environment, Types of microbes, their growth and role in environment.	2	5
2	Quality and Quantity of Water for supply to towns/Cities: Sources of water, Assessment of domestic and industrial requirement, Impurities in water, Indian standards for drinking water, Water borne diseases and their control. The water (prevention and control of pollution) Act – 1974.	8	20
3	Characteristics of Wastewater: Physical, chemical, and biological characteristics of domestic and industrial wastewaters. BOD and COD, study of characteristics of several industrial wastewaters like textile, chemical dairy and pharmaceutical wastewaters. Indian Standards for effluent to be disposed in receiving water body like rivers, estuaries, lakes, sea and oceans. Disposal of treated wastewaters (i) into inland surface waters; (ii) into oceans; (iii) into public sewers (iv) into estuaries and (v) onto land. Effect of organic pollution on Stream, river water quality, and self-purification, DOSAG Curve.	8	20
4	House Drainage: Principles of house drainage, pipes and traps, Classification of traps: nahni trap, gulley trap, interception trap, grease trap, sanitary fitting, system of plumbing, house drainage plan for buildings.	6	15
5	Solid Waste Management: Quantity composition and characteristics of solid wastes. Classification of solid wastes, Typical generation rate for solid wastes, factors affecting the generation rate. Estimation of quantity of solid waste, Onsite handling, storage and processing, collection services, types of collection systems, Solid waste processing techniques, Mechanical volume reduction, Thermal	8	20

	volume reduction, manual component separation. Ultimate disposal, land filling with solid waste.		
6	Air Pollution: Definition, Composition of atmospheric air, Classification, and sources of air pollutants. Effects of air pollution on human, plant and material, Air pollution control methods, equipment, and safety. Salient features of the Air (Prevention and control of pollution) Act – 1981.	4	10
7	Noise Pollution: Measurement of sound, Sources, Effects and control of noise pollution.	2	5
8	Introduction to: “The environment (Protection) Act – 1986, Environmental Audit and Impact Assessment	4	10

Course Learning Outcome:

1. Understand the role of microorganisms in various components of environments
2. Understand the quality and characteristics of waste water
3. Design and prepare drainage plan of buildings
4. Understand and design solid waste management system
5. Understand various types of pollution
6. Understand various environmental Acts.
7. Determine various water/air quality parameters

Reference Books:

1. P. Sincero and G.A. Sincero, Environmental Engineering, Prentice Hall of India, New Delhi.
2. M. L. Davis, Water and waste water Engineering, Mc Graw Hill education (India) Pvt. Ltd. 2013 edition.
3. G.S. Birdie and J.S. Birdie, Water Supply and Sanitary Engineering, Dhanpat Rai Publishing Co. Ltd.
4. H.C. Parkins, Air Pollution, McGraw-Hill Pub.
5. J.A. Salvato, Environmental Sanitation, Wiley Interscience.
6. M.L. Davis and D.A. Cornwell, Introduction to Environmental Engineering, McGraw Hill Int. edition.
7. Dr. K N Duggal, Elements of Environmental Engineering, 3rd edition,

List of Open-Source Software/learning website:

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

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the role of microorganisms in various components of environments	L-2
CLO2	Understand the quality and characteristics of waste water	L-2
CLO3	Design and prepare drainage plan of buildings	L-6
CLO4	Understand and design solid waste management system	L-2 and L-6
CLO5	Understand various types of pollution	L-2
CLO6	Understand various environmental Acts.	L-2
CLO7	Determine various water/air quality parameters	L-4

L1- Remember, L2- Understand, L3- Apply, L4- Analyze, L5- Evaluate, L6- Create

Mapping of CLOs with POs & PSOs

	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
Course Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	M					M							M	M	
CLO2	M		M			M							M	M	
CLO3	M	M	M						L			M	M	M	M
CLO4	M	M	M										M	M	
CLO5	M		M										M	M	
CLO6	M	M	M						L			M	M	M	M
CLO7	M		M			M							M	M	

H: High, M: Medium, L: Low