

Subject Code: 1ET1060406	Subject Title: ENVIRONMENTAL ENGINEERING
Pre-requisite Subject	Basic Knowledge of nature & Environment.

Course Objective:

The Civil engineer must be aware of the environmental effects of pollutants, their characteristics and manage systems to mitigate them.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total (T+P)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	0	2	4	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
01	Introduction: Components of environment, Types of microbes, their growth and role in environment.	02	05
02	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.	08	20
03	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.	08	20
04	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.	06	15
05	Solid Waste Management: Quantity composition and characteristics of solid wastes. Classification of solid wastes. Hazardous solid wastes, Biomedical 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. Determination of vehicle and labor requirements, collection routes, transfer stations, location of transfer stations, transfer means and methods, solid waste processing techniques, Mechanical volume reduction, Thermal volume reduction, manual component separation. Ultimate disposal, land filling with solid waste, Design of landfills.	10	20
06	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.	04	10
07	Noise Pollution: Measurement of sound, Sources, Effects and control of noise pollution.	02	05
08	Introduction to: "The environment (Protection) Act – 1986.	02	05

Course Outcome:

After learning the course the students should be able to:

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

List of References:

- (1) A. 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 Practicals:

1. Introduction to Equipment in Environmental Engineering Laboratory
2. Introduction to Standards, Sampling, Collection and Preservation of samples
3. Determination of pH and conductivity for water and wastewater
4. Determination of Solids (suspended, dissolved and settleable)
5. Determination of Acidity, Alkalinity and Hardness.
6. Determination of hardness and residual chlorine.
7. Determination of fluoride and nitrate.
8. Measurement of noise at different sources using sound meter.
9. Ambient air quality measurement using High Volume sampler.