GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: V
CIVIL ENGINEERING

Subject Name: **Environmental Engineering**
Subject Code: **150603**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Internal Assessment (I)**
3	0	2	5	70	30	50

MODULE - I	
1.	**Introduction:** Components of environment, Types of microbes, Growth and their role in environment.
2.	**Quality and Quantity of Water:** Sources of water, Assessment of domestic and industrial requirement, Impurities in water, Indian standards for drinking water, Water borne diseases and their control.

MODULE - II	
1.	**Characteristics of Wastewater:** Physical, chemical and biological characteristics of domestic and industrial wastewater. Industrial water and wastewater: Typical industries viz. textile, chemical, dyeing and dairy. Indian Standards for effluent disposal and receiving water body. 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 river water quality, DO sag curve.

MODULE - III	
1.	**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.

MODULE – IV	
1.	Solid Waste Management: Quantity, Composition and characteristics of solid waste, Methods of solid waste collection, conveyance, treatment and disposal.

MODULE - V	
1.	**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.
2.	**Noise Pollution:** Measurement of sound, Sources, Effects and control of noise pollution.
3.	Introduction to Environmental Impact Assessment and Environmental Audit.

Note: Each module has 20 percent weightage.

List of Practical:

Sr. No	Title of Practical	No of Turns
1.	Introduction to Equipment in Environmental Engineering Laboratory	1
2.	Introduction to Standards, Sampling, Collection and Preservation of samples	1
3.	Presumptive test for coliform bacteria	1
4.	Determination of pH and conductivity for water and wastewater	1
5.	Determination of Solids(suspended, dissolved and settleable)	1
6.	Determination of Acidity, Alkalinity and Hardness	2
7.	Determination of fluoride and nitrate	1
8.	Measurement of residual chlorine	1
9.	Ambient air quality measurement using High Volume sampler	1
10.	Exhaust gas analysis for air pollutants	1
11.	Measurement of noise at different sources using sound meter	1
12.	Characterization of municipal solid waste (physical and chemical)	2

Note:

Term work shall be based on the above practical turns.

Reference Books:

1. A.P. Sincero and G.A. Sincero, Environmental Engineering, Prentice Hall of India, New Delhi.
2. G. Tchabanoglous, Solid Waste Treatment and Disposal, McGraw Hill Pub.
3. G.S. Birdie and J.S. Birdie, Water Supply and Sanitary Engineering, Dhanpat Rai Publishing Co. New Delhi.
4. H.C. Parkins, Air Pollution, McGraw-Hill Pub.
5. H.S. Peavy, D.R. Rowe and G. Tchbanoglous, Environmental Engineering, McGraw Hill International Edition.
6. J.A. Salvato, Environmental Sanitation, Wiley Interscience.
7. L.W. Canter, Environmental Impact Assessment, McGraw Hill Pub.
8. M.L. Davis and D.A. Cornwell, Introduction to Environmental Engineering, McGraw Hill International edition.
9. Metcalf and Eddy,(Revised by G. Tchobanoglous Wastewater Engineering: Treatment, disposal Reuse, Tata-McGraw Hill, New Delhi.