

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VI
ENVIRONMENTAL SCIENCE AND ENGINEERING

Subject Name: Principles of Air and Noise Pollution

Subject Code:163701

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

Sr No	Course Contents
1	Sources of air pollution- stationary and mobile, fugitive emissions, secondary pollutants; Effects of air pollution in regional and global scale, air pollution episodes; Emission factors inventory and predictive equations.
2	Atmospheric meteorology, wind profiles, turbulent diffusion, topographic effects, separated flows, temperature profiles in atmosphere, stability, inversions, plume behaviour.
3	Air quality monitoring - objectives, time and space variability in air quality; air sampling design, analysis and interpretation of air pollution data, guidelines of network design in urban and rural areas.
4	Stack monitoring. Air pollution standards and indices.
5	Dispersion of air pollutants and modelling -- Basic concepts, inversion layer and mixing height, atmospheric stability classes, Box model, The Gaussian dispersion model -- point, area and line sources. Prediction of effective stack height - physics of plume rise, Holland's equation, Briggs equation, etc. modifications of Gaussian dispersion models; indoor air quality models. Air pollution control devices.
6	Noise Pollution: Basics of acoustics and specification of sound; sound power, sound intensity and sound pressure levels; plane, point and line sources, multiple sources; outdoor and indoor noise propagation; psycho-acoustics and noise criteria, effects of noise on health, annoyance rating schemes; special noise environments: Infra-sound, ultrasound, impulsive sound and sonic boom; noise standards and limit values; noise instrumentation and monitoring procedure. Noise indices.

List of Practicals:

1.	Demonstration of air pollution monitoring instruments
2.	Determination of SPM; PM10 using HVS
3.	Estimation of SO ₂ and NO _x in ambient air using analytical method
4.	Elemental analysis of particulate matter
5.	Demonstration of stack monitoring kits
6.	Generation of Wind rose diagram.

7.	Demonstration of noise pollution monitoring equipment
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TEXT BOOKS:

1. Air Pollution – by Wark & Warner
2. Air Pollution – by M. N. Rao
3. Air Pollution – by Henry Parkins
4. Air Pollution – by Stern Vol – I