

IV Year I Semester
Code: 17CE732

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AIR POLLUTION AND CONTROL (Dept.Elective-I)

Course Learning Objectives

The course will address the following:

1. To know the analysis of air pollutants
2. To know the Threshold Limit Values (TLV) of various air pollutants
3. To acquire the design principles of particulate and gaseous control
4. To learn plume behaviour in different environmental conditions
5. To learn carbon credits for various day to day activities

Course Learning Outcomes

Upon successful completion of this course, the students will be able to

1. Decide the ambient air quality based on the analysis of air pollutants
2. Understands Thermodynamics and kinetics of air pollution
3. Design particulate and gaseous control measures for an industry
4. Judge the plume behaviour in a prevailing environmental condition
5. Estimate carbon credits for various day to day activities

SYLLABUS

UNIT – I

Air Pollution: Sampling and analysis of air pollutants, conversion of ppm into $\mu\text{g}/\text{m}^3$. Definition of terms related to air pollution and control - secondary pollutants – Indoor air pollution – Ozone holes and Climate Change and its impact - Carbon Trade.

UNIT-II

Thermodynamics and Kinetics of Air-pollution: Applications in the removal of gases like SO_x , NO_x , CO and HC - Air-fuel ratio- Computation and Control of products of combustion, Automobile pollution. Odour pollution control, Flares.

UNIT – III

Meteorology and Air Pollution: Properties of atmosphere: Heat, Pressure, Wind forces, Moisture and relative Humidity, Lapse Rates - Influence of Terrain and Meteorological phenomena on plume behaviour and Air Quality - Wind rose diagrams and Isopleths Plume Rise Models

UNIT-IV

Ambient Air Quality Management: Monitoring of SPM - RPM SO_2 ; NO_x and CO - Stack Monitoring for flue gases - Micro-meteorological monitoring – Noise Monitoring - Weather Station. Emission Standards- Gaussian Model for Plume Dispersion

UNIT-V

Air Pollution Control: Control of particulates – Control at Sources, Process Changes, Equipment modifications, Design and operation of control Equipments – Settling Chambers, Cyclone separators –Fabric filters–Scrubbers, Electrostatic precipitators

UNIT – VI

Air Pollution Control Methods: Control of NO_x and SO_x emissions – Environmental friendly fuels - In-plant Control Measures, process changes, methods of removal and recycling. Environmental criteria for setting industries and green belts.

TextBooks:

1. Air Pollution and Control, K.V.S.G.Murali Krishna, Laxmi Publications, New Delhi, 2015
2. Air Pollution, M. N. Rao and H. V. N. Rao, Tata McGraw Hill Company.

References:

1. An Introduction to Air pollution, R. K. Trivedy and P.K. Goel, B.S. Publications.
2. Air Pollution by Wark and Warner-Harper & Row, New York.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	3	2	3	3	2	3	3	2	3	2	3	3
CO2	3	1	2	3	1	2	3	1	2	3	1	2	1	2	3
CO3	3	3	1	3	3	1	3	3	1	3	3	1	3	1	3
CO4	3	2	1	3	2	1	3	2	1	3	2	1	2	1	2
CO5	3	3	1	3	3	1	3	3	1	3	3	1	3	1	3
CO6	3	1	1	3	1	1	3	1	1	3	1	1	1	1	1