

III Year I Semester

Code: 20CE5428

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AIR POLLUTION CONTROL

Course 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 behavior in different environmental conditions

Course Outcomes

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

1. Identify sources of air pollution
2. Control Automobile pollution and Odor pollution
3. Judge the plume behavior in a prevailing environmental condition
4. Decide the ambient air quality based on the analysis of air pollutants
5. Design particulate and gaseous control measures for an industry

UNIT – I Air Pollution:

Definition of terms related to air pollution and control-Sources of air pollution-Primary and secondary pollutants – Indoor air pollution – Ozone holes and Climate Change.

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- Control of products of combustion, Automobile pollution. Odor pollution control

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 SO₂; NO_x and CO - Stack Monitoring for flue gases – Noise Monitoring - Weather Station. Emission Standards- Impact of Air pollution on human health, animals and plants

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

Text Books:

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 Warkand Warner- Harper & Row, New York.