IV Year II Semester

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Code: 17CE842

AIR POLLUTION CONTROL
(Open Elective –II)

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 behavior 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 behavior 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 μg/m3. 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 SOx, NOx, 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 SO2; NOx 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 NOx and SOx emissions – Environmental friendly fuels - In-plant Control Measures, process changes, methods of removal and recycling. Environmental criteria for setting industries and green belts.

TEXT BOOKS:

1. AirPollutionandControl,K.V.S.G.MuraliKrishna,LaxmiPublications,NewDelhi, 2015
2. AirPollution, M. N. Raoand H. V. N. Rao, TataMcGrawHill Company.

REFERENCE:

1. AnIntroduction to Airpollution, R. K. Trivedyand P.K. Goel, B.S. Publications.

2. AirPollution byWarkand Warner-Harper&Row, New York.