AIR POLLUTION AND CONTROL
(Professional Elective- II)

Course Code: 20CE1154	**L**	**T**	**P**	**C**
	3	**0**	**0**	**3**

Pre-requisites: Environmental Science, Environmental Sanitation

Course Outcomes: At the end of the course, the student will be able to:
CO1: Distinguish the different sources of air pollution, effects and emission standards (L3)
CO2: Determine the plume dispersion under different meteorological conditions using different models (L3)
CO3: Describe the properties of particulate pollutants and to control them at source using different methods (L2)
CO4: Discuss the design process for removal of gaseous pollutants (L2)
CO5: Categorise industries with respect to site selection, zoning, legislation and emission Standards (L3)

UNIT-I **(10 Lectures)**

AIR POLLUTION:

Air Pollution – Definition of Air Pollution-Sources and classification of air pollutants - Effects of air pollution: on humans, plants and buildings -Global effects: ozone layer depletion, global warming, green house effects and climate change -Air Quality Emission Standards-Sampling of pollutants in ambient air- Stack sampling.

Learning outcomes:
At the end of the unit, the student will be able to
1. Describe sources and classification of air pollutants (L2)
2. Explain effects of air pollution (L2)
3. Analyze pollutants in ambient air-stack sampling (L3)

UNIT-II **(10 Lectures)**

METEOROLOGY:

Factors influencing air pollution -Wind rose -Mixing depths-Lapse rates and dispersion-Atmospheric stability- Plume rise and dispersion-Prediction of air quality-Box model-Gaussian model- Dispersion coefficient-Application of tall chimney for pollutant dispersion.

Learning outcomes:
At the end of the unit, the student will be able to
1. Explain factors influencing air pollution (L2)
2. Describe prediction of air quality (L2)
3. Estimate concentration of air pollutants by mathematical models (L2)

UNIT-III **(10 Lectures)**

CONTROL OF PARTICULATE POLLUTANTS:

Properties of particulate pollutants-Particle size distribution-Control mechanism-Dust removal equipment - Design and operation of Settling chambers, Cyclones, Wet dust Scrubbers, Fabric filters and ESP.

Learning outcomes:
At the end of the unit, the student will be able to
1. Describe the properties of particulate pollution (L2)
2. Discuss different types of pollution control equipment (L2)
3. Explain application of dust removal equipment (L2)

UNIT-IV **(10 Lectures)**

CONTROL OF GASEOUS POLLUTANTS:

Process and equipment for the removal of gaseous pollutants by chemical methods – Design and operation of absorption and adsorption equipment-Combustion and condensation equipment.

Learning outcomes:
At the end of the unit, the student will be able to
1. Explain different types of gaseous pollutants control methods (L2)
2. Design different types of gaseous pollutants control equipment (L2)
3. Describe combustion and condensation equipment (L2)

UNIT-V **(10 Lectures)**

AIR QUALITY MANAGEMENT:

Zoning and site selection-Other management controls, AP legislation, Automobile pollution and Control - Air Emission standards.

Learning outcomes:
At the end of the unit, the student will be able to
1. Explain about process of site selection (L2)
2. Describe AP legislation (L2)
3. Discuss the emission standards (L2)

Text Books:

1. K.V.S.G. Murali Krishna, "Air pollution and Control", Kaushal Publications – Kakinada 1995.
2. Wark and Warner, "Air pollution Its Origin and Control", 2nd Edition, Harper & Row, NewYork, 1981.

Reference:

1. R.K. Trivedy and P.K. Goel, "An introduction to Air Pollution", B.S. Publications, Hyderabad, 2009.