

CH407 INDUSTRIAL POLLUTION CONTROL ENGINEERING**Course Description & Objectives:**

This course is designed to learn a variety of chemical, physical, biological treatment processes related to industrial pollution control

This course is to make pollution profiles of the industries, categorization, control methodologies and technologies, system design, ethic concepts and solving of the engineering problems on industrial systems

Course Outcomes:

1. Understanding of air/water pollution regulations and their scientific basis
2. Apply knowledge for the protection and improvement of the environment
3. Ability to monitor and design the air and water pollution control systems
4. Ability to select and use suitable waste treatment technique

UNIT I -

Types of emissions from chemical industries and effects of environment, environment legislation, Type of pollution, sources of wastewater, Effluent guidelines and standards,

UNIT II -

Characterization of effluent streams, oxygen demands and their determination (BOD, COD, and TOC), Oxygen sag curve, BOD curve mathematical, controlling of BOD curve, self purification of running streams, sources and characteristics of pollutants in fertilizer, paper and pulp industry.

UNIT III -

General methods of control and removal of sulfur dioxide, oxides of nitrogen and organic vapors from gaseous effluent, treatment of liquid and gaseous effluent in fertilizer industry.

UNIT IV -

Air pollution sampling and measurement: Types of pollutant and sampling and measurement, ambient air sampling: collection of gaseous air pollutants, collection of particulate air pollutants. Stack sampling: sampling system, particulate sampling, and gaseous sampling. Analysis of air pollutants: Sulphur dioxide, nitrogen oxides, carbon monoxide, oxidants and Ozone, hydrocarbons, particulate matter.

UNIT V -

Air pollution control methods and equipments: Source collection methods: raw material changes, process changes, and equipment modification. Cleaning of gaseous equipments particulate emission control: collection efficiency, control equipment like gravitational settling chambers, Cyclone separators, fabric filters, scrubbers, packed beds and plate columns, venturi scrubbers, their design aspects. Control of gaseous emissions: absorption by liquids, absorption equipments, adsorption by solids.

TEXT BOOKS

1. Environmental pollution and control engineering, Rao C. S. - Wiley Eastern Limited, India, 1993.
2. Pollution control in process industries by S.P. Mahajan TMH.,1985.

REFERENCE BOOKS

1. Waste water treatment by M.Narayana Rao and A.K.Datta,Oxford and IHB publ. New Delhi.
2. Air pollution control by P.Prathap mouli and N.Venkata subbayya. Divya Jyothi Prakashan, Jodhpur.
3. "Industrial Pollution Control and Engineering." Swamy AVN, Galgotia publications, 2005. Hyderabad