NIRMA UNIVERSITY
School of Engineering, Institute of Technology
B.Tech. in Chemical Engineering

Open Elective Course

L	T	P	C
3	0	0	3

Course Code	**XXXXX**
Course Title	**Air Pollution Control Techniques**

Course Outcomes (CO):

At the end of the course, student will be able to-

1. appraise fundamentals of sources, effects, sampling & monitoring of air pollutants
2. evaluate air quality and specific source of air pollution
3. determine appropriate air pollution control systems for the industries

Syllabus:

		Teaching Hours
Unit I	**Introduction** Air pollution in India and the World, sources and classification of air pollutants, global concern of air pollutants, effects of air pollutants, emission inventory	03
Unit II	**Air Quality Criteria and Standards** Air quality criteria, criteria pollutants, types of emission standards, variant forms of emission standards, means for implementing emission standards, other rules and regulations related to air pollution	05
Unit III	**Air quality monitoring, sampling, and analysis** Gaseous and particulate pollutants sampling and analysis, ambient air sampling, stack sampling, online monitoring of air pollutants	08
Unit IV	**Air pollution control methods and equipments** Source correction methods, particulate control techniques like gravity settling chambers, cyclone separator, filters, electrostatic precipitator, wet scrubbers, control technologies for gaseous pollutants like Scrubbers, absorption and adsorption, control of specific gaseous pollutants like SO_x, NO_x, recent trends in air pollution control techniques	16
Unit V	**Control of Specific Pollutants** Control of volatile organic compounds (VOCs) and odour: source, characteristics, measurement, environmental significance and its control	03
Unit VI	**Control of Mobile Sources** Introduction; gasoline-powered vehicles; diesel-powered vehicles; gas turbines and jet engines; alternatives to existing mobile sources.	03
Unit VII	**Industrial air pollution control system** Emissions & its control from thermal power plant, petroleum refinery, Metallurgical Industries and other industrial processes	03
Unit VIII	**Indoor Air Quality** Factors influencing indoor air quality, indoor air pollutants, effects of indoor air pollutants, control of indoor pollutants	03

Self Study:

The self study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self study contents.

Suggest Readings:

1. Bouble R. W., Fox D. L., Turner D. B., Stern A. C., *Fundamentals of Air Pollution*, Academic Press.
2. Rao C. S., *Environmental Pollution Control Engineering*, New Age International.
3. Rao M. N., Rao H. V. N., *Air Pollution*, Tata McGraw Hill.
4. Mudakavi J. R., *Principles and Practices of Air Pollution Control and Analysis*, I. K. International.
5. Bhatia S. C., *Textbook of Air Pollution and its Control*, Atlantic Publishers & Distributors.
6. Trivedy R. K., Goel P. K., *An Introduction to Air Pollution*, BS Publications.

L- Lecture, T- Tutorial, P- Practical, C-Credit