



Environmental Air Pollution

SWAYAM Prabha Course Code - C18

PROFESSOR'S NAME	Prof. Mukesh Sharma
DEPARTMENT	Civil Department
INSTITUTE	Indian Institute of Technology, Kanpur
Course Outline	<p>Introduction and Scope Environmental Systems: Source, Pollutant Transport and Impact on Receptor</p> <p>Environmental Quality and Pollution: Air-Water quality parameters, units for expression; beneficial uses of water; water quality criteria and standards, air quality criteria, health effects and Indian national air quality standards (including methods for standard setting)</p> <p>Air Pollution Sources and Assessment of Air Pollution Load– preparation of emission inventory, its presentation (data base) and interpretation</p> <p>Disposal, Fate and Transport of Waste:</p> <p>(i) pollutant dispersion in lakes, reservoirs, rivers, ground water, disposal and stream quality standards, (ii) air pollution dispersion, transportation and chemical transformation, meteorological parameters, simple box and gaussian type model for point, area and line (vehicular sources) (iii) Tutorials and simulated examples</p> <p>Solid and Hazardous Waste Management: generation, collection, classification, processing and disposal, composting, land filling, incineration, hazardous waste definition and disposal</p> <p>Air Pollution Control Particulate removal mechanism and processes; reduction of gaseous pollution dry and wet scrubbing</p> <p>Noise Pollution: causes, measurements, prevention and control</p>

Environmental policies and regulations; water act, water cess act air act, environmental protection act, hazardous and biomedical waste rules, public liability insurance act, EIA notification, and regulatory mechanism

Environmental Impact Assessment (EIA): Assessment Procedure – Identification, prediction and evaluation; EIA methodologies; EIA statement and report preparation; examples and simulated case studies

COURSE DETAILS

S. No	Module ID/ Lecture ID	Lecture Title/Topic
1	L1	Introduction to Atmosphere
2	L2	Air Pollution Systems
3	L3	Air Quality Standards
4	L4	Types and Forms of Air Pollutants
5	L5	Measurement Units and Particulate classification
6	L6	Interpretation and Particle size Distribution
7	L7	Atmospheric formation of Air Pollutants I
8	L8	Atmospheric formation of Air Pollutants II
9	L9	Atmospheric formation of Air Pollutants III
10	L10	Kinetics of Air pollution and combustion processes
11	L11	Internal Combustion Engine and Air Pollution I
12	L12	Internal Combustion Engine and Air Pollution II
13	L13	Air Pollution and Health I

14	L14	Air Pollution and Health II
15	L15	Emission Inventory
16	L16	Sources of Air Pollution
17	L17	Emission from Fugitive Sources and Sulfuric Acid Production
18	L18	Aluminium Production and Air Pollution I
19	L19	Aluminium Production and Air Pollution II
20	L20	Coke Production and Air Pollution
21	L21	Examples for Practice
22	L22	Meteorological Measurements and their interpretation
23	L23	Examples for Practice - Dispersion Modeling
24	L24	Vertical Temperature Profile of Atmosphere
25	L25	Stability, Mixing Height and Plume Behavior I
26	L26	Stability, Mixing Height and Plume Behavior II
27	L27	Examples - Solar Radiation Based Stability Calculation
28	L28	Air Quality Modeling I
29	L29	Air Quality Modeling II
30	L30	Derivation of Gaussian Model
31	L31	Gaussian Model - Useful Formulation
32	L32	Plume rise, Area and Line Source Model
33	L33	Air Quality Modeling - Maximum Ground Level concentration
34	L34	Examples of Air Quality Modeling
35	L35	Air Pollution Control Devices I
36	L36	Air Pollution Control Devices I

37	L37	Source Emission Monitoring
38	L38	Receptor Source Modeling
39	L39	Environmental laws

References if Any: