

**B.E. Semester: VIII**  
**Civil Engineering**  
**Subject Name: AIR POLLUTION (CV804-C)**

**A. Course Objective:**

- To take up the basic concepts of air pollution.
- To introduce students to basic concepts of pollution.
- The contents involved the knowledge of causes of air pollution.
- The contents involved the knowledge of health related to air pollution.
- To develop skills relevant to control of air pollution.

**B. Teaching /Examination Scheme:**

Teaching scheme				Total Credit	Evaluation Scheme					Total
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract/ Tut.	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
03	02	00	05	05	03	70	30	20	30	150

**C. Detailed Syllabus:**

1. **Introduction:** History of Air pollution and episodes, Sources of air pollution and types, Introduction to meteorology and transport of air pollution: Global winds, Hadley cells, wind rose terrestrial wind profile, Effects of terrain and topography on winds, lapse rate, maximum mixing depths, plume rise
2. **Transport of Pollution in Atmosphere:** Plume behavior under different atmospheric conditions, Mathematical models of dispersion of air pollutants, Plume behavior in valley and terrains. Plume behavior under different meteorological conditions, Concept of isopleths
3. **Effects of Air Pollution:** Effects of Air Pollution on human beings, plants and animals and Properties. Global Effects-Green house effect, Ozone depletion, heat island, dust storms, Automobile pollution sources and control, Photochemical smog, Future engines and fuels
4. **Air Pollution control:** Air Pollution control- at source-equipments for control of air pollution-For particulate matter-Settling chambers-Fabric filters-Scrubbers-Cyclones-Electrostatic precipitators, For Gaseous pollutants-control by absorption-adsorption-scrubbers-secondary combustion after burners, Working principles advantages and disadvantages, design criteria and examples.
5. **Air Quality Sampling and Monitoring:** Stack sampling, instrumentation and methods of analysis of SO<sub>2</sub>, CO etc, legislation for control of air pollution and automobile pollution

#### D. Lesson Planning:

Sr.No.	Title of the Unit	Minimum Hours	Weightage (%)
1	History of Air pollution and episodes	10	17%
2.	Transport of Pollution in Atmosphere:	10	17%
3.	Effects of Air Pollution	10	17%
4.	Air Pollution control	20	32%
5.	Air Quality Sampling and Monitoring	10	17%

#### E. List of Tutorials:

Sr. No.	Title
1	Introduction to air pollution
2	Cause of air pollution
3	Effect of air pollution
4	Air pollution control
5	Air quality sampling and monitoring

#### F. Instructional method and pedagogy (Continuous Internal Assessment Scheme) (CIA):

- At the start of course, the course delivery pattern, prerequisite of the subject will be Discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries marks.
- At regular intervals assignments will be given. Students should submit all assignments during given period.
- Classroom participation and involvement in solving the problems in Tutorial rooms Carries Marks
- Internal exam of 30 marks will be conducted as a part of Mid semester evaluation.
- Experiments shall be performed in the field related to course contents.
- The course includes a practical, where students have an opportunity to build an appreciation for the concept being taught in lectures.

#### G. Students Learning Outcomes:

On the completion of the course one should be able to understand:

- Concepts of air pollution.
- How to estimate the quantity of air pollutant.
- Be able to develop control technologies.

## **H. Recommended Study Materials**

### **A . Reference Books:**

1. H.C Parkins, Air Pollution Mc Graw Hill Publication
2. H.S. Peavy, D.R. Row & G. Tchobanoglous, Environmental Engineering, Mc Graw Hill International Edition
3. Martin Crawford, Air Pollution Control Theory, TMH Publ.

### **B. Web Materials:**

1. <http://www.epa.gov>
2. <http://www.indiaenvironmentportal.org.in>
3. <http://nptel.iitm.ac.in>
4. <http://www.filtersource.com>
5. <https://dgserver.dgsnd.gov>.