**17CE4XO1 - AIR POLLUTION AND CONTROL**

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| **Course Category** | Open Elective | **Credits** | 3 |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3 - 0 - 0 |
| **Prerequisite** | Environmental Studies | **Sessional Evaluation**  | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course Objectives** | 1. To know the various sources of air pollution and their effect on human beings, materials and vegetation.
2. To learn about dispersion of air pollutant.
3. To study processes, approaches, and devices used to control air pollution.
4. To familiarize with control of gaseous pollutant.
5. To know about standards, monitoring, and indices of air quality with case studies of some industries.
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| **Course Outcomes** | CO1 | Understand the concepts of air pollution.  |
| CO2 | Assess the sources and classification of air pollutants. |
| CO3 | Estimate the quantity of air pollutant. |
| CO4 | Develop the control technologies for particulate pollutants. |
| CO5 | Develop control technologies for Gaseous pollutants. |
| CO6 | Understand the fundamental concept of environmental management and its relationship with sustainable development of our community. |
| **Course****Content** | **UNIT I****INTRODUCTION TO AIR POLLUTION:** Definition of Air Pollution - Sources & Classification, Source inventory of Air Pollutants - Air Quality and Emission standards - Sampling of Pollutants in ambient air - Stack sampling.**UNIT II****EFFECTS OF AIR POLLUTANTS:** Effects of air pollution on human beings, materials, vegetation, animals – global warming-ozone layer depletion, Sampling and Analysis – Basic Principles of Sampling – Source and ambient sampling – Analysis of pollutants – Principles.**UNIT III****METEOROLOGY AND AIR POLLUTION:** Elements of atmosphere- Factors influencing air pollution, Wind rose, Mixing Depths, Lapse rates and dispersion. Atmospheric stability, Plume rise and dispersion.**UNIT IV****CONTROL OF PARTICULATE POLLUTANTS:** Properties of particulate pollution - Particle size distribution - Control mechanism - Dust removal equipment –working principle and operation of settling chambers, cyclones, wet dust scrubbers, fabric filters & ESP. **UNIT V****CONTROL OF GASEOUS POLLUTANTS:** Process and equipment for the removal by chemical methods - Design and operation of absorption and adsorption equipment - Combustion and condensation equipment. **UNIT VI****AIR QUALITY MANAGEMENT**Air quality standards – Air quality monitoring – Preventive measures - Air pollution control efforts – Zoning – Town planning regulation of new industries – Legislation and enforcement – Environmental Impact Assessment and Air quality. |
| **Textbooks****and****References** | **TEXT BOOKS:**1. Anjaneyulu, D., Air Pollution and Control Technologies, Allied Publishers, Mumbai, 2002.
2. Rao, C.S., Environmental Pollution Control Engineering, Wiley Eastern Ltd., New Delhi, 1996.
3. Rao M.N., and Rao H. V. N., Air Pollution Control, Tata-McGraw-Hill, New Delhi, 1996.

**REFERENCES:**1. W.L.Heumann, Industrial Air Pollution Control Systems, McGraw-Hill, New Yark, 1997
2. Mahajan S.P., Pollution Control in Process Industries, Tata McGraw-Hill Publishing Company, New Delhi, 1991.
3. Peavy S.W., Rowe D.R. and Tchobanoglous G. Environmental Engineering, McGraw Hill, New Delhi, 1985.
4. Garg, S.K., Environmental Engineering, Vol. II”, Khanna Publishers, New Delhi
5. Colls, J., Air Pollution: Measurement, Modeling and Mitigation, CRC Press, 2009.
6. Noel, D. N., Air Pollution Control Engineering, Tata McGraw Hill Publishers, 1999.
7. Stern, A.C., Fundamentals of Air Pollution, Academic Press, 1984.
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