Course Type	Course Code	Name of the Course	L	T	P	Credits
DC	NESC503	**Air and Noise Pollution**	3	1	0	4

Course Objectives
- The objective of the course is to comprehend the essential concepts of Air and Noise pollution.
- The objective of the course is to understand and evaluate the behaviour of air pollutants and the strategies to control their presence in the ambient atmosphere.

Overall Learning Outcomes
Upon successful completion of this course, students will be able to:
- Have a vivid understanding of the concepts of Air and Noise Pollution.
- Brief on the behaviour of air pollutants in atmosphere.
- Design different types of control equipment's for the abatement.

Unit No.	Topics to be covered	Contact Hr (L+T)	Learning outcomes
I	Air Pollution: Types and Sources of air pollution-ambient and indoor air pollution- Health and environmental effects of air pollution- air pollution episodes- Emission factors, inventory and predictions. Air quality monitoring - Objectives, time and space variability in air quality; air sampling design, analysis and interpretation of air pollution data, guidelines of network design in urban and rural areas. Stack monitoring. Air pollution standards and indices.	8+2	Understanding of the major sources, effects and monitoring of air and noise pollutants.
II	Meteorology: Forces affecting vertical and horizontal movement of air, global and local circulation of air, types of cloud, micro climate, wind profiles, topographic effects, stability of atmosphere using temperature profile, inversions, plume behaviour and calculation of plume rise, turbulent diffusion, concept of mixing height and determination of stability class. Carrying Capacity with respect to air, Concept of SODAR.	7+2	Understanding of the key transformations and meteorological influence on air pollutant dispersion.
III	General properties of particle and flue gas and particle dynamics. Design of control device for particulate pollutant-Gravity settler- Cyclone separators- fabric filters-Electrostatic Precipitator -wet scrubber. Control of motor vehicle emissions.	10+4	Develop a theoretical concept of designing a control device for particulate pollutant.
IV	Design of control device for gaseous pollutant-absorption-adsorption-incineration-condensation. Control of NO_x, CO_2 and VOC.	10+3	Get an idea of designing a control device for gaseous pollutants.
V	Noise Pollution Basics of acoustics- propagation of indoor and outdoor sound- noise profiling effects of noise – measurement, index and mitigation methods- health effects of noise- Vibration and its Effects, Whole body vibration and Hand induced vibration. Noise Control Measures - Sound Absorption, Acoustic Barrier, Vibration Isolation, Vibration Damping, Muffling, Personal Protector.	7+3	To study the noise pollution and its scientific basis. Get the idea for various noise control measures
		42+14	

Text Books:
1. Boubel, R. W., Vallero, D., Fox, D. L., Turner, B., & Stern, A. C. Fundamentals of air pollution 4th edition Elsevier, 2008
2. Environmental Noise Pollution – PE Cunniff, McGraw Hill, New York.

Reference books:
1. Theodore, L. Air pollution control equipment calculations, John Wiley & Sons, Inc 2008
2. Cooper, C.D., Alley, F.C. Air pollution control: A design approach, 4th edition Waveland Press, Inc 2010.
3. CS Rao, Environmental Pollution Control Engineering- Wiley Eastern Ltd., New Delhi, Latest Edition
4. Murphy, E., King, E., Environmental Noise Pollution, Elsevier, 2014
5. De Nevers, N., Air Pollution Control Engineering, 3rd edition Waveland Press Inc 2016.
6. Boubel, R. W., Vallero, D., Fox, D. L., Turner, B., & Stern, A. C. Fundamentals of air pollution 4th edition Elsevier,2008.
7. Noise Pollution and Control Strategy- by Sagar Pal Singal, Alpha Science International Ltd; 2005 2nd Edition