SPECIALIZATION IV : ENVIRONMENTAL ENGINEERING

CEDX 41	AIR AND NOISE POLLUTION	L	T	P	C
SDG: 3	CONTROL	3	0	0	3

COURSE OBJECTIVES:

The objectives of the course are to impart knowledge on

COB1: the sources of air pollution and their effects on living and non-living environment.

COB2: sampling methods, analysis of air pollutants and dispersion of pollutants in environment

COB3: air pollution control equipment for gaseous and particulate pollutants

COB4: air quality management and regulations.

COB5: the sources, effects, prevention and control of noise pollution.

MODULE I SOURCES AND EFFECTS OF AIR POLLUTANTS **8**

Classification of air pollutants – Particulates and gaseous pollutants – Sources of air pollution – Source inventory – Natural contaminants – aerosol - gases and vapour - Elements of atmosphere – Meteorological factors - Effects of air pollution on human beings, materials, vegetation, animals – global warming - ozone layer depletion.

MODULE II SAMPLING, ANALYSIS AND DISPERSION OF POLLUTANTS **9**

Basic Principles of Sampling – Source and ambient sampling – Analysis of pollutants – Principles – Wind roses – Lapse rate - Atmospheric stability and turbulence – Plume rise – Dispersion of pollutants – Dispersion models – Applications.

MODULE III AIR POLLUTION CONTROL **9**

Concepts of air pollution control – Principles and design of control measures – Particulates pollutant control by gravitational, centrifugal, filtration, scrubbing, electrostatic precipitation – Selection criteria for equipment - gaseous pollutant control by adsorption, absorption, condensation, combustion – Pollution control for specific major industries.

MODULE IV AIR QUALITY MANAGEMENT 9

Air quality standards – Air quality monitoring – Preventive measures - Air pollution control initiatives – Zoning – Town planning regulations for new industries – Legislation and enforcement – Environmental Impact Assessment and Air quality.

MODULE V NOISE POLLUTION 10

Sources of noise pollution – Characterization of Noise based on sources - Effects – Assessment - Standards – Prevention and Control of Noise Pollution at source, transmission, and receptor protection and other types - Noise Sound Absorbent – Noise Pollution Analyser – Acoustic quieting - Mechanical isolation technique, Acoustical absorption, Constrained layer damping – OSHA Noise standards and indices.

L – 45; Total Hours – 45

TEXT BOOKS:

1. Anjaneyulu, D., “Air Pollution and Control Technologies”, Allied Publishers, Mumbai, 2002.
2. Chandrappa, R., Kulshrestha, U.K., “Sustainable Air Pollution Management: Theory and Practice”, Springer International Publishing House, AG Switzerland, 2015.
3. Rao, C.S., “Environmental Pollution Control Engineering”, New age International (P) Ltd., Revised 2nd Edition, 2006.
4. Surampalli, R., Zhang,T.C., Brar, S.K., Hegde,K., Pulicharla, R., Verma, M., “Handbook of Environmental Engineering”, McGraw Hill Professional, 2018.

REFERENCES:

1. Antony Milne, “Noise Pollution: Impact and Counter Measures”, David & Charles PLC, 2009.
2. Noel de Nevers, "Air Pollution control Engg." McGraw-Hill, New York,2005.
3. Peterson and Gross .E Jr., “Hand Book of Noise Measurement”, 7th Edn, 2003.
4. Rao.M.N , Rao, H.V.N "Air Pollution", Tata McGraw Hill, 2009.
5. Vallero, D., “Fundamentals of Air Pollution”, Elsevier Publishers, 5th Edition, 2014.

6. Wang, L.K., Pereira,N.C., “Hung,Y.T., “Advanced Air and Noise Pollution Control” Hand book of Engineering”, Vol-II, The Humana Press, Springer Science & Business Media New Jersey, 2007.

COURSE OUTCOMES:

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

CO1: classify the sources of air pollution and list its effects on living and non-living environment

CO2: sample, analyse the various air pollutants and demonstrate the procedure for dispersion.

CO3: identify and describe the functions of equipment available to control air pollution

CO4: suggest air pollution management through legislation and regulations

CO5: describe sources, characteristics, effects and control of noise pollution.

Board of Studies (BoS) :

16th BoS of Civil held on 5.1.2022.

Academic Council:

18th Academic Council held on 24.02.2022

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	L	-	-	M	M	-	-	-	-	L	-	-	L
CO2	-	-	L	-	-	M	M	M	L	L	-	L	L	-	L
CO3	-	-	L	-	-	M	M	M	L	L	-	L	L	-	L
CO4	-	-	L	-	-	M	M	M	L	L	-	L	-	-	L
CO5	-	-	L	-	-	M	M	M	L	L	-	L	L	-	L

Note: L- Low Correlation M -Medium Correlation H -High Correlation

SDG 3 : Ensure healthy lives and promote well-being for all at all ages.

Statement : The understanding of air & noise pollution control and management substantially reduce the pollution and improves the health and well being of human