SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Masters of Technology
Environmental Engineering

M.Tech. I Semester II

Subject Name: Air and Noise Pollution **Subject Code:** MTEN13202

Type of course: Core- IV
Prerequisite: Basic knowledge of Air and Noise Pollution in Environmental Engineering

Rationale: Students will be understand the Air and Pollution criteria and its control in detail
Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	2	4	60	25	15	30	20	150

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Content	Total Hrs	Module Weightage
1	**Air Quality and Standards:** Definition, Sources and classification and Pollutant emission, Impact of air pollution on human health and vegetation and atmosphere, Reactions of pollutants and their effects, smoke, smog and ozone layer disturbance, Greenhouse effect, Ambient air and stack sampling, measurement of air pollutants, pollutant measurement methods, principles and instruments, Air quality standards. Air pollution case studies Sound Pressure, Sound Pressure level (Decibel), Leq, Octave band analysis, sources of noise and harmful effects of noise, noise measurement and noise	14	25%

	control measures, point and line sources, multiple sources; outdoor and indoor noise propagation		
2	**Atmospheric Meteorology:** An introduction, Atmospheric motion, Lapse rates, Atmospheric stability, Wind profiles, turbulent diffusion, topographic effects, separated flows, temperature profiles in atmosphere, stability, inversions and its effects, and plume behavior,Maximum Mixing Depths, Plume rise	12	15%
3	**Air Pollution Particulate Control Technology:** Settling chambers, cyclone separation, Wet collectors, Fabric filters, electrostatic precipitators and other removal methods like absorption, Adsorption and precipitation.	6	20%
4	**Air Pollution Gaseous Control Technology:** Removal of gaseous pollutants by adsorption, absorption, reactions and other methods.	5	20%
5	**Vehicular Pollution:** Vehicular Pollution, Emission Standards for Indian Context, Influencing Parameters for Vehicular Emissions, Remedial Measures, Catalytic Converters, Exhaust Gas Recirculation, Current Practices for Controlling Emissions	6	20%

Suggested Specification table with Marks (Theory):

% Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	**15**	**20**	**20**	**15**	**15**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

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Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Environmental Pollution Control and Engineering	Rao C.S.	New Age International (P) Limited	1 January 2018	Third
2	Air Pollution Control Engineering	Noel De Nevers	McGraw-Hill Education	16 November 1999	Second
3	Fundamentals of Air pollution,	Richard W. Boubel	Academic Press, New York, 1994.	1994	Third
4	Fundamentals of Air Pollution	Daniel A. Vallero	Elsevier Science 9780124046023, 0124046029	26 July 2014	--
5	Advanced Air and Noise Pollution Control: Volume 2	Lawrence K. Wang, Norman C. Pereira, Yung-Tse Hung	Humana; 2005	2005	First
6	Principles of Air Quality Management	Roger D. Griffin	CRC Press	April 19, 2016	Second
7	Air Pollution: Its Origin and Control	Kenneth Wark	Intex Educational Pub	2001	Second
8	Air Pollution Measurement, Modelling and Mitigation	Abhishek Tiwary and Jeremy Colls	Taylor & Francis	August 2009	Third

Course Outcomes:

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Sr. No.	CO statement	Marks % weightage
CO-1	Understanding about the various air pollutants, their source of generation, their impacts and mechanism of control. (U,R cognitive level)	20%
CO-2	To study effects of air and noise pollution on the environment and air quality index. (U,R cognitive level)	25%
CO-3	Study air pollutant control technology (N, E, C cognitive level)	20%
CO-4	Understand vehicular pollution emission and remedial measures (U,N,C cognitive level)	20%
CO-5	Prepare plan strategies to control and reduce air pollution (E,C cognitive level)	15%

FOR LAB SESSIONS:

List of Experiments:

- Sampling of PM 2.5 in ambient air.
- Sampling of Respirable Suspended Particulate Matter PM10 in ambient air
- Sampling of Suspended Particulate Matter in ambient air.
- Sampling and analysis of nitrogen dioxide in ambient air.
- Sampling and analysis of sulphur dioxide in ambient air.
- Demo of Stack monitoring kit.
- Demo of weather monitoring station.
- Demo of handy air sampler

Major Equipment Needed:

- Respirable dust sampler
- PM2.5 Sampler
- Stack monitoring kit
- Sound level meter

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- Handy air sampler etc.
- Weather Monitoring Station

List of Open Sources/Learning Website:

https://nptel.ac.in/courses/105/102/105102089/

NAAQS Manual Volume II pdf

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