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|  | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | **CURRICULUM** | | |
| Programme | | | **Master of Technology** | | | | | Year of Regulation | | | | | **2018-19** | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | **II** | | |
| Course Code | | Course Name | | Pre-requisite | | Credit Structure | | | | Marks Distribution | | | | | |
| L | T | P | C | INT | | MID | END | | Total |
| **CE 514** | | **Air and Noise Pollution** | | **NIL** | | **3** | **0** | **0** | **3** | **50** | | **50** | **100** | | **200** |
| Course Objectives | | 1. Ability to describe the effect air pollution and noise pollution; discuss the method to solve the problems. 2. **This course provides a comprehensive overview of air and noise quality and the science and technology associated with the monitoring and control.** 3. Ability to explain the principal of equipment’s for participate, air pollution treatment, ventilation system and reduce noise pollution in the industry**.** 4. Ability to explain the principal of equipment’s for participate, air pollution treatment, ventilation system and reduce noise pollution in the industry | | | Course Outcomes | | CO1 | Able to get concept of participates, air pollutants, natural and artificial methods of ventilation; the concept of noise pollution | | | | | | | |
| CO2 | Be able to calculate the units for participates and air pollution treatment | | | | | | | |
| CO3 | Be able to understand the concepts involved in control technologies | | | | | | | |
| CO4 | Be able to calculate the units for participates and air pollution treatment. | | | | | | | |
| CO5 | Be able to Select suitable technology for noise pollution control; participates, air pollution treatment system; ventilation system | | | | | | | |
| SYLLABUS | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | Hours | | | COs | |
| I | **Introduction:**  Sources and classification of air pollutants Atmospheric meteorology, structure of atmosphere and layer classification, Global air pollution, Kyoto protocol, Carbon credit and carbon trading; Legislations and regulations: Ambient air quality standards, Emission standards, emission inventory, and Acts, wind profiles, topographic effects, temperature profiles in atmosphere, stability, inversions, plume behavior, turbulent diffusion, concept of mixing height and determination of stability class application of acoustic sounding (SODAR) technique. | | | | | | | | | | **12** | | | CO1, CO 2 | |
| II | **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, Dispersion of air pollutants and modelling – Types and classification of models, purpose of air quality modelling, Box models, Gaussian dispersion model – Assumptions, modifications for ground reflection, line sources and complex terrain. Physics of plume rise, Holland's equation, Briggs equation, etc. Indoor air quality modelling, Features and application of regulatory models. | | | | | | | | | | **12** | | | CO2, CO3, CO4 | |
| III | **Noise Pollution:**  **Basics of acoustics and specification of sound; sound power, sound intensity and sound pressure levels; plane, point and line sources, multiple sources; outdoor and indoor noise propagation; noise criteria, effects of noise on health, annoyance rating schemes; special noise environments: Infra-sound, ultrasound, impulsive sound and sonic boom; noise standards and limit values; noise instrumentation and monitoring procedure. Noise indices.** | | | | | | | | | | **12** | | | CO2, CO3, CO4 | |
| Total Hours | | | | | | | | | | | **36** | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | |
| 1. Rao, M. N. and Rao, H. V. N., Air pollution, Tata McGraw-Hill Publishing Co; Ltd, New Delhi, 1993.  2.Nevers, N. D., Air Pollution Control Engineering, McGraw-Hill International Ed., 1993. | | | | | | | | | | | | | | | |
| 3.Wayne T. D., Air Pollution Engineering Manual, John Wiley & Sons, 2000 | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | |
| 1. Wark, K. and Warner, C.F., Air Pollution, Its Origin and Control, Harper and Row, New York, 1981. | | | | | | | | | | | | | | | |
| 2. Rao, C. S., Environmental Pollution Control Engineering, New Age Int. Pubs, 1991, Reprint, 2005. | | | | | | | | | | | | | | | |
| 3. Richard C. Flagan và John H. Seinfeld, Fundamentals of Air pollution Engineering, Prentice-Hall, Inc., 1998. | | | | | | | | | | | | | | | |