**IBM-NAAN MUDHALAAN PHASE-1**

**DOMAIN: DATA SCIENCE**

**TITLE: Air Quality Analysis & Prediction using**

**Data Science**

**DATA SCIENCE:**

Data science is the study of the data to extract meaningful insights for business.it is a fields of mathematics , statistics ,artificial intelligence and computer engineering.

**DATA**: collection of information

**STEPS:**

* Problem identification
* Data collection
* Data preparation
* Data model
* Data analysis
* Model evaluation

**Air Quality analysis:**

Air quality analysis and prediction involve assessing the current state of the air in a specific location and using that information to forecast future air quality conditions. This process is crucial for understanding environmental pollution, its impact on public health, and for making informed decisions to mitigate its effects.

**Air quality analysis Example:**

Examples are to use less toxic raw materials or fuels, use a less-polluting industrial process, and to improve the efficiency of the process. The Clean Air Technology Center serves as a resource on air pollution prevention and control technologies, including their use, effectiveness and cost.

**Types of air quality models:**

* Statistical Models
* Chemical Transport Models (CTMs)
* Machine Learning Models
* Epidemiological Models
* Dispersion Models
* Hybrid Models
* Satellite-based Models

**The goal of Air quality analysis & prediction :**

Prediction of air pollution index may help in traffic routing and identifying serious pollutants. Modeling of the complex relationships between these variables by sophisticated methods in machine learning is a promising field.

**10 steps in Air quality analysis & prediction :**

* Using public transports.
* Turn off the lights when not in use.
* Recycle and Reuse.
* No to plastic bags.
* Reduction of forest fires and smoking.
* Use of fans instead of Air Conditioner.
* Use filters for chimneys.
* Avoid usage of crackers.

**Rules of Air quality analysis:**

This revised national standard aims to provide uniform air quality for all, irrespective of land use pattern. the provisions of the Air (Prevention & Control of Pollution) Act, 1981, the CPCB has notified fourth version of National Ambient Air Quality Standards (NAAQS) in 2009.

**The life cycle of Air quality analysis:**

To test the importance of incorporating full life cycle supply chain information when performing air quality impact assessment, we perform a sensitivity analysis that considers only emissions from the single phase of each life cycle most frequently associated with its environmental impacts