



## WMO ARTS AND SCIENCE COLLEGE, MUTTIL

### DEPARTMENT OF CHEMISTRY

### CERTIFICATE COURSE ON

### ENVIRONMENTAL CHEMISTRY WMCHE2

No. of Hours: 30

Course Co-ordinator: Dr. Thomas Thevara

#### Course Objectives

The objective of this certificate course is to provide students with an understanding of the chemical processes that occur in the environment, and the impact of human activities on the environment. Students will learn about the sources, transport, fate and effects of environmental pollutants. The course will also provide students with an introduction to environmental regulations and policies.

#### Syllabus

##### Module 1: Introduction to Environmental Chemistry

Overview of environmental chemistry-Natural and anthropogenic compounds in the environment-Environmental transport and fate of pollutants-Chemical equilibrium and kinetics in the environment-Thermodynamics in environmental systems

##### Module 2: Sources and Types of Environmental Pollution

Water pollution-Air pollution- Soil pollution Agricultural pollution-Industrial pollution-Noise pollution- Waste disposal and management- Waste management systems-Waste-to-energy technologies-Life-cycle assessment of waste management.

##### Module 3: Analytical Techniques in Environmental Chemistry

Sampling techniques-Chemical analysis of environmental samples-Interpretation of analytical results.

##### Module 4: Global Environmental Issues

Climate change and greenhouse gases-Greenhouse effect-Global warming-Carbon cycle-Climate models-Impacts of climate change-Ozone depletion-Montreal Protocol and its amendments-Acid rain chemistry.

## **Module 5: Environmental Regulations and Policies**

International, national and local environmental regulations-Environmental policy and decision making-Case studies of environmental problems and solutions.

### **Course Outcome**

- Understand the chemistry of natural and anthropogenic compounds in the environment.
- Analyze environmental samples and interpret the results.
- Identify sources of environmental pollution and evaluate their impact on the environment.
- Identify various global environmental issues and impacts.
- Evaluate environmental policies and regulations and propose solutions to environmental problems.